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THE  
PHILADELPHIA JOURNAL  
OF THE  
MEDICAL AND PHYSICAL SCIENCES.

SUPPORTED BY AN ASSOCIATION OF PHYSICIANS,

AND

EDITED BY N. CHAPMAN, M. D.  
PROFESSOR OF THE INSTITUTES AND PRACTICE OF PHYSIC AND CLINICAL  
PRACTICE, IN THE UNIVERSITY OF PENNSYLVANIA.

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“In the four quarters of the globe, who reads an American book? or goes to  
an American play? or looks at an American picture or statue? *What does the  
world yet owe to American Physicians or Surgeons?*”

*Edinburgh Review, No. LXV.*

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VOL. IX.

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William Fry, Printer.  
1824.

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*Edinburgh Review, No. LXV.*

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D. CALDWELL,

Clerk of the Eastern District of Pennsylvania.

M. L. R.

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ART. I. *An Essay on Indigestion.*—By JOHN JAMES, M. D.

THE object of the following paper is to illustrate the importance of the dietetic treatment of indigestion, and to attempt to explain some unnoticed physiological relations of parts, that are deemed of practical importance, and to defend the supposition, that usually, in dyspepsia, we have been taught to lay too much stress on the secondary, or auxiliary, digestive organs. I shall also attempt to show that the chylopoetic viscera are arranged in three distinct compartments, and that the process of digestion is divided into three stages, corresponding with the anatomical relations of the various portions of the canal and its auxiliaries—and I shall endeavour to show that such a view of the digestive system enables us more readily to understand the phenomena of disease, and to derive the indications of artificial treatment.

By the primary digestive organs, I mean to designate the

alimentary canal, properly so called—and by the secondary, or auxiliary organs, the salivary glands, the gastric exhalants, the pancreas, the liver, &c. The internal, vital, villous surface of the whole intestinal tube, is supposed to be the seat of the digestive function, as the cellular surface of the air vessels of the lungs is the seat of the respirative function. Regular respiration and digestion insure, and nothing but that regularity can insure, the perpetuity of the animal organization. Physiologically and pathologically considered, these vital functions are of equal importance. The digestive system, compared with the respirative, is more complicated, and receives the aid of more collateral, secondary organs. We have noticed many affections of these auxiliary organs, and we seem to forget, in our treatment of them, that these organs constitute a subservient part of a system. In this paper, the liver, it is supposed, as a secondary organ, more frequently becomes diseased through the medium of the chylopoetic system, than it imparts diseased actions to the organs constituting that system—in fact, that the affections of the liver occurring in dyspeptic cases, are usually to be considered as the effect of that disease, not the cause of it.

The three portions of the alimentary canal, are each accompanied by assistant organs, and each portion performs a distinct part in the process of digestion.

The lacteals of each portion, or compartment, are supposed to possess an elective power, by which they select their appropriate fluids—the digestion of one portion does not produce aliment fit for another portion, and when the partially digested food is hurried along the canal with too much rapidity, it becomes, from error of place, offensive and foreign.

The assistant chylopoetic viscera, we suppose, usually derive their diseases from the primitive organs, and it is generally erroneous to consider the primitive organs as deriving morbid actions from the secondary, as the liver, spleen, &c. but when idiopathic derangements exist in the auxiliary organs, corresponding disease is necessarily gene-



rated in the primitive. Both become occasionally important, both in the relation of cause and effect.

Dyspepsia, properly so called, is a complaint of gradual development, depending on various predisposing causes, but always excited by errors of diet. It is characterized by two stages, incipient and confirmed, and the medical treatment is considered under two divisions—dietetic and curative. The dietetic treatment consists in relieving the digestive organs of undue labour—the medical treatment, in removing offending causes, in obviating accidental symptoms, and in restoring tone to debilitated organs.

Deranged action of the assistant chylopoetic viscera, requires a modified application of the same general principles. In protracted indigestion, it is common for various parts of the system to be brought into a state of sympathetic diseased action, or more properly and correctly speaking, the system, depressed by the long defect of assimilation, and consequent nutrition, exhibits partial and erratic, or anomalous demonstrations of disease. The most common and distressing of these effects is the universal sympathy of the nervous system in the melancholic form of the complaint. This transfer of morbid action, from a vital to a sentient system, seems to be a useless, or worse than useless, participation—it strengthens the original disease, and arms it with indescribable horrors.

The physical organs, unconnected with the sentient system, are often brought into association, or symptomatic morbid actions, as explained by Mr. Abernethy in his paper on the constitutional origin of local diseases. In many instances, these local affections arrest, for a time, the progress of the original disease, and if a judicious prescription is made to aid the obvious indication of nature, the patient may recover from disturbed conditions of the digestive organs, without further inconvenience—but in general, the occurrence of local diseases in indigestion does not materially affect the diagnosis or prognosis. We may, perhaps, remove the local disease by a timely attention to the state of the stomach. We are assured by the occurrence of local

disease of the character in question, that the system suffers from some erroneous or defective action in the digestive organs, and it is of much importance, when irregularities of the digestive process are thus expressed by local diseases, not to allow such diseases long to occupy their places, because the local affection is liable soon to become wholly independent of its remote cause.

Good digestion, with a consequent natural growth of parts, and glandular secretion, is attended with agreeable sensations; such as constitute the consciousness of health, and the pleasure of life, as opposed to tedium. In old age that peculiar tedium necessarily takes place, which results from a poverty of the secretions, and a diminution of the body from unsupplied absorption. The emaciation of age, or of defective assimilation, is anticipated by persons labouring under indigestion. The muscles shrink, the blood forsakes the cutaneous capillaries, and the skin becomes wrinkled, as in age; but the irritability of the nervous system is less exhausted. Such patients are incapable of enjoying the pleasures of youth, and have an aggravated consciousness of the miseries of age. They are susceptible of the keenest sensations of an unpleasant nature. They are querulous, irritable, irascible, suspicious and desponding, and the victims of causeless and unreasonable anxieties. The body is tormented with acute, wandering and erratic pains, that pass quickly from one part to another, without producing any tumour, redness, or inflammation. "Every part of the system," says Faithorn, "seems with him ill at ease, and after his sufferings arise to that alarming crisis that no language is capable of conveying the degree of horror and misery under which he labours, his apprehension pictures every thing in the blackest colours—his mind, bereaved of its former tranquillity, is the seat of fears and forebodings, feeling a distrust or want of confidence in his best friends—he becomes the creature of torture from the slightest and most trivial causes—his days are literally days of pain, and his nights, nights of anguish—his temper is irritable and perplexed, he is driven to passion by the slightest

opposition, and the simplest circumstances act upon him with such poignancy as to drive him sometimes to despair and madness; no subject affects him so much as his own health—to this he is tremblingly alive with the most awful apprehension—and the idea of death hangs perpetually on his atrabiliary and bewildered imagination.” In many persons this morbid state of mind terminates in more complete mania, or it slowly subsides, and is succeeded by a gradual restoration to health. When hypochondriac affections become established, we conclude that the auxiliary digestive organs, more especially the liver, have become the seat of disease, and the treatment requires to be modified accordingly. Between the first deviations from healthful digestion and this confirmed state of disease, there are numerous intermediate gradations of morbid action, which it is the object of the present paper to discriminate, and which opens the legitimate field for medical practice, and dietetic treatment.

### *Pathological Inquiries.*

In order to give some degree of perspicuity and accuracy to our pathological inquiries, it appears necessary to consider the alimentary canal as divided into three distinct, but mutually dependent portions—each portion, or compartment, being distinguished by its independent or separate vital action, and requiring distinct consideration in the diagnosis and treatment of indigestion. These supposed subdivisions of the alimentary canal, are predicated on the anatomical conformation of its several parts, and comprehend, first, the stomach and salivary system, which we shall denominate the gastric portion—second, the duodenum, jejunum and ileum, with the pancreas and liver, or the duodenal portion—and the cæcum, with the appendix vermiformis, the colon and the rectum, which constitute the third or cæcal portion. The gastric portion terminates at the pylorus, and is distinguished from the duodenal portion by its greater muscularity—its more dense and prominent nervous villi—the rugose structure of its fourth, or inner



coat—and by the longitudinal direction of its external muscular fibres. It terminates in a small ascending orifice, through which, during the process of digestion, the regular peristaltic motion impels the alimentary residuum. This residuum is the morsel of food remaining undigested after it has been a sufficient time in the stomach, the muscular coat, the gastric juice, and the salivary menstruum having duly acted on it. It has also yielded its proportion of chyle to the gastric lacteals, and when expelled from the stomach through the pylorus, it is supposed to be expelled by a physiological necessity; because the food, in the state and condition it had attained, is no longer fit to remain in that viscus. If it had remained longer, after having been prepared for this natural exit, the consequence would have been some departure from healthful phenomena, and consequent disease, as we shall endeavour to explain below. But in the duodenum, the partially concocted alimentary matter finds an appropriate place; a new menstruum in the pancreatic juice, and perhaps a new solvent in the bile; all adapted to the substance previously prepared for their agency, by the stomach. The pyloric orifice is considered the termination of the first alimentary compartment. The duodenum is somewhat more dilated than this orifice—it is furnished with a villous coat, less distinct and florid—the duodenum diminishes in diameter from its commencement to its termination, and this diminution continues through the jejunum and ileum. From the beginning of the duodenum to the termination of the ileum, there is a gradual and progressive diminution of circular muscular fibres, and of apparent vascularity. Throughout the duodenal compartment, which is supposed to terminate at the colon, there is a total deficiency of those longitudinal muscular fibres which distinguish the stomach. The ileum terminates in a narrow ascending valvular orifice, slightly analogous to the pylorus. The caput coli expands into a large viscus, almost as capacious as the stomach. Here the villous coat is still less obvious and vascular than in the small intestines. This compartment is supplied with no diluting men-



struum like the saliva, the pancreatic juice, or the bile. It is distinguished by the appendix vermiformis, which is conjectured to be an important auxiliary organ.

The large intestines are furnished with fasciculi of longitudinal muscular fibres, which give the contractile power requisite to compress and mould the inspissated and condensed fæcal mass. Here the alimentary residuum attains some degree of solidity, and acquires the fæcal odour. In this third alimentary compartment, perhaps there is, strictly speaking, no digestion. The digestive action, or function, of the duodenal portion, compared with the cæcal portion, is more obvious and important. Yet it is as independent of the stomach, as the second stomach is independent of the first in ruminating quadrupeds. Like the stomach, it is aided by its assistant organs, as before intimated. These auxiliary organs are the pancreas and liver. By an inexplicable vital operation, the digestive system possesses the power of appropriating to the necessary uses of the animal economy a certain and proper proportion of the alimentary matter presented for its election. It is vain for us to attempt to explain this animal and vital process, by an application to it of mechanical principles, or the relations of chemical affinity. The gastric solvent, when made the subject of experiment and chemical analysis, is found to be inadequate to its supposed important agency, and the parietes of the alimentary canal do not possess sufficient muscularity, or strength, to admit of a comminution of food, as has been supposed, entirely or principally mechanical. Yet it cannot be denied that the chemical affinities of the gastric juice, and the mechanical power of the stomach, do in a slight degree aid the digestive process. It seems to be of some importance to know that the mechanical power of the stomach, or the chemical action of the gastric secretion, can be of little moment in considering the phenomena of health or disease. Is it not well known that some species of medusæ, hardly possessing cohesion enough to admit of their being taken unbroken from the water, have a digestive apparatus sufficiently powerful to allow them to feed on tes-

taceous molusca? Dogs devour the hard cylindric bones of animals, and if the stomach be laid open a short time after they have swallowed them, the bony fragments will be found divested of phosphate of lime, and may be cut with a knife like macerated horn. It is true this result appears like the effect of a chemical decomposition, and we can apparently imitate this process by subjecting the bones of animals to the action of dilute muriatic acid. When we assert, however, predicating our belief on apparent analogy, that the two experiments prove the identity of the principle on which the decomposition takes place, our assertion is wholly gratuitous. If in this experiment we substitute for dilute muriatic acid, the gastric juice removed from the stomach, will it succeed? Most certainly not. The gastric juice, when removed from the stomach, is a feeble chemical agent, and we contend that the decomposition of phosphate of lime in the stomach of a dog, is not a chemical, but a vital or elective decomposition, as we shall endeavour to explain hereafter. Chyle, whether it results from vegetable or animal aliment, possesses nearly the same chemical character, and in all cases is coagulable as soon as it is secreted. Is not this coagulability an evidence that the fluid has already acquired vitality? The digestive organs have the power of decomposing and rearranging elementary matter, as the vegetative growth reproduces, in new forms, its alimentary materials. Vegetation and digestion confer new, and sometimes permanent, forms on matter, and the power of doing this is supposed to be one of the attributes of vitality.

Vitality is a principle beyond the scope of our investigation. No analogy will justify us in degrading the phenomena of vitality, by a comparison with the results of chemical experiments, where the ingenuity of man feebly attempts to imitate the works of his Creator. The powerful agency of digestion and vegetation in giving new forms to matter, is noticed in those plants whose bark or rind contains quartz, and those animals whose shell is principally composed of lime. Shells and bones seem to be created by the digestive organs of animals. In the chylopoetic sys-

tem, the same power which assimilates alimentary matter, confers vitality on the new formed material. Is it not fair to suppose that organs capable of converting lifeless materials into a vital fluid, have also power to select from the heterogeneous mass such ultimate particles as are best adapted to their purpose?

An experiment performed by Wilson Philip, and referred to in his late work on indigestion, shows that grass recently eaten by a rabbit, was found, on examination, to form a thin stratum all over the inside of the stomach, while grass which had been eaten before, and was partially digested, remained in the centre of the cavity of the stomach, compacted into an irregular mass, which the concentric film of more recent grass surrounded. Hence, we may infer that the matter to be digested must first be brought in contact with the nervous coat of the stomach; and we suppose that this sentient surface has the power to attract to itself the appropriate alimentary matter, of detaining it as long as it is requisite, and of decomposing it by an animal, or vital, not a chemical process. In the duodenum, the jejunum, and the ileum, the food is also seen to adhere slightly to the villous coat. It is probable, nay, certain, that digestion continues in this portion of the canal in a manner analogous to that of the stomach, but under new circumstances, and aided by other assistant organs, as before intimated. These assistant organs are the liver and the pancreas. In this digestive compartment, the pancreatic juice seems to be similar to the saliva of the first compartment, and the bile, perhaps, has a remote resemblance to the gastric juice. These secretions evidently combine with the alimentary matter rejected from the stomach, and afford a menstruum through which it is again presented to an extensive and organized digestive surface. The feeble muscularity of the small intestines, is only sufficient to impel the comminuted and semifluid aliment equably and gently along the canal.

In the third compartment, or cæcal portion of the digestive canal, the alimentary matter parts with much of its remaining moisture, and acquires the fæcal consistence and



odour. It is evident that these changes are not produced by fermentation, or any chemical process which art can imitate. The alimentary matter is detained longer in the large than in the small intestines. Some physiologists have conjectured that the appendix vermiformis secreted the peculiar odour that now characterizes the fæcal mass. I know of no fact that invalidates this supposition, but several observations have tended to confirm it. Doubtless some important agency must be assigned to this organ, as a useless appendage is contrary to the general economy of nature—more especially one of such constant occurrence and uniformity. The alimentary matter being detained an uncertain time in the large intestines, undergoes the change peculiar to that portion of the digestive organs. It is deemed very important, in a practical point of view, to be aware that this process is distinct and independent of the earlier stages of digestion. The rejected aliment does not become excrementitious until it has passed the cæcum. While undergoing this last change, it continues to contribute to the system some nutrition, until the mass becomes inspissated and reduced to the perfect fæcal form.

As soon, then, as digestion commences in the stomach, the lymphatics are employed in conveying the chyle to its destined confluence with the circulation. The absorbent mouths of the lacteal vessels in the several portions of the alimentary canal have an elective power: the food rejected by the gastric absorbents immediately and regularly passes the pylorus—a new series of lacteals, with new capacities, employ their election, on the material adapted to their peculiar habitudes: without delay the residuum passes on to the cæcum, where its lacteals accept of what is no longer adapted to the stomach or small intestines. The unfitness of the alimentary contents of one portion of the canal for the digestion of another portion, is mutual and universal. The stages of the digestive process, are distinct and definite; the food that has undergone the action of one portion, and passed from it, cannot with impunity be returned—nor can it be hurried prematurely along the canal, without produ-

cing a pernicious effect. The material in the cœcum is as unfit for the stomach, as that in the stomach is for the cœcum. Both, when misplaced, are abhorrent to nature. Healthful action of these organs consists in a due, and energetic, and regular peristaltic motion, or a motion conforming to the progress of digestion. A diminution of the energy of the digestive organs, and consequent irregular and unconformable peristaltic motion, constitutes the disease called dyspepsia.

Some affections of the assistant chylopoetic viscera, induced by a previous derangement of other parts of the digestive system, have, perhaps, too frequently been considered primary affections. Indigestion has been supposed, in some cases, to be caused by a morbid state of the liver, when the disorder of that gland was the effect of an earlier derangement of the primary digestive organs. The villous coat of the stomach may be called the beginning, the liver the end or termination of the chylopoetic system. For in the villi commences the vital assimilation, and at the liver, ultimately, arrives the blood which has been employed in the gastric circulation. From such a scene of duty the blood flows to the liver. The vena portæ receives its supplies from the whole range of circulation, connected with the lacteal system. Is it not probable that the liver is more directly influenced by the blood it receives, than it influences those parts whence its blood is derived? The blood thrown into this gland, is not directed there in the course of ordinary circulation, but it undergoes, in the liver, a peculiar change, and supports the biliary secretion. The fitness of the blood to enable this gland to perform its functions, may be presumed in some measure to depend on the condition, and healthy or diseased state of the organs from whence it is derived. We might as well impute the asphyxia, which is caused by inhaling carbonic acid gas, to a disease of the lungs, or we might as well call the carbonic acid a lung complaint, as to misname many of the disorders of the alimentary canal, as we do, in denominating them "the liver complaint." Obviously we mistake, in many instances, the cause for the effect—or rather, the effect for the

cause. When the biliary secretion, from whatever circumstance, is rendered imperfect, deficient, or is wholly suspended, the whole digestive system must necessarily suffer—but we can only hope to correct a morbid condition of this organ through the medium of the digestive system. The biliary secretion, in all cases, is much influenced by the state of the alimentary canal. In miasmatic or other fevers, when digestion is suspended, the flow of natural bile ceases. In all continued fevers, which terminate by a regular crisis, it affords a good prognosis when bile of a natural appearance is perceived in the dejections of the stomach. Often, in such fevers, we are confident that a favourable change, though unobserved, has taken place, when we notice in the matter thrown from the stomach, natural bile, or perceive in the alvine discharges a fæcal odour. In all fevers, or other morbid affections, that disturb, considerably, the arterial circulation and suspend digestion, the biliary secretion is changed. The liver is a part of the alimentary system in such cases universally deranged, and its regular action, in common with that of other organs, awaits the return of health. Because irregularities of the biliary secretion occur in cases of indigestion, we are not authorized in supposing that the liver is the only, or the chief, offending organ. Its functions, are deranged simultaneously with the alimentary canal, and the whole secreting system. Sometimes the unhealthy state of the liver and its secretion depends on previous disease in other parts, and when idiopathic in the liver, the associate organs will doubtless be forced into a corresponding bad action. There exists an interchange of morbid excitement, which propagates disease in the system, and frequently confounds causes with effects, and effects with causes.

The pancreas is seldom the seat of any disease that changes, or materially diminishes, the quantity of its secretion. The salivary glands also maintain their action through many chronic affections, and seem to be slow to participate in the ordinary derangements of the digestive organs. The salivary discharge may be excited by tobacco, or other-



wise, and even diverted from its natural direction without much inconvenience. Indigestion, however, is sometimes induced by too much spitting, and the body is supposed to be wasted by ptyalism, independently of the specific irritation on which it depends—yet it is evident that a very considerable waste of this secretion is provided for by nature. As the saliva is the diluting menstruum of the first digestive compartment, we suppose the pancreatic juice to perform a similar office in the second.

### *Indigestion.*

The growth and development of every part of the body—the activity and strength of the muscles—the healthful condition of the solids and fluids—the reproduction of wasted or destroyed parts—irritability—sensation—all depend on the digestive organs. A tree might as well flourish without its root, as an animal without digestion. Having endeavoured, in our previous remarks, to point out the distinct, but mutually dependent, action of the several portions of the alimentary canal, we proceed to enquire into some of its most ordinary deviations from healthy action. And here we must acknowledge that the proximate cause of morbid phenomena is always of difficult investigation, or wholly eludes our research. Vitality itself, is above the scope of our understanding. In this, as in all other inquiries, we must proceed on known premises, where such are afforded, and pursue the most obvious analogies, when the nature of our subject will not permit the illustrations of experiment.

The ultimate nervous coat, or inner surface of the alimentary canal, is supposed to be the seat of the digestive power. That living surface often loses the capacity of performing regularly, and perfectly, its functions. What is the nature of the change on which this loss depends? What are its causes? In what degree, and at what period, are the secondary organs involved in these changed, improper, or imperfect actions? What are the indications of cure, and what the rules of diagnosis? These are inquiries which

present an extensive field of research, at which our limits will only permit a cursory glance.

The action of the villous coat is excited by the stimulus of aliment, and perhaps an obscure sensation results from healthful digestion, which constitutes a part of the undefined pleasure of existence. When the same surface is stimulated with alcohol, and certain narcotic vegetables, a peculiar action takes place, which may be termed false digestion. In some temperaments it arises to a degree distinctly pleasurable. The excitable organ, under the influence of a diffusible stimulus, over-acts, or is more excited, than by a solid and proper aliment, yet the lacteals receive no chyle, and the whole digestive system is forced into a false and excessive action, which of course must be followed by a state of inaction, torpor, or indirect debility. The debility that follows this excess is not so serious and permanent as that incident to the abuse of food, yet it is analogous to the affection we denominate dyspepsia. The disgust which follows the abuse of alcohol, relates more especially to the particular combination of it with water and sugar, or gin, or brandy, or wine, with which the excess has been committed. So the first disgust of dyspeptic patients is usually confined to the particular article of food which has been taken in excess, while other aliment may be employed as usual.

In all cases, however, we suppose indigestion essentially depends on a chronic incapacity of the villous coat—and that the incapacity, or debility, has been caused by over stimulation.

Dyspepsia, in its most common form, is a chronic complaint of obscure or unobserved origin, which gradually acquires strength, importance, and distinctness of character.

A person who has been heretofore in the habit of eating fruits of various kinds, with perfect impunity, finds himself unexpectedly indisposed after his customary indulgence. Perhaps he feels an acute pain, referrable to the duodenum, and is conscious that the unripe, or unusually acid fruit is the cause of it. The next time he tastes the same fruit, al-



though he may only taste it, he soon perceives a pain similar to that he had experienced before, and he is instantly reminded of the cause; as often as he tastes the offending article, he suffers more or less inconvenience, until by repeated admonitions, he learns the necessity of abstaining from it altogether. This acquired antipathy always continues a long time, and is rarely overcome in after life. More frequently, the first derangement of the digestive organs, which ushers in dyspepsia, is caused by animal food taken in too great quantity, or by some rich, high seasoned article, to which the stomach is unaccustomed. Certain vegetables, and esculent roots, are liable to produce this effect—as cabbage—radish—onion—cucumber, &c. Every instance of slight injury from taking improper food, or any food too freely, produces some incapacity of the stomach for receiving again, and digesting, the same article. This is often the fact, when there is no acquired distaste for the particular kind of food. The stomach discriminates when the taste does not.

The injury sustained by such errors in diet, are more or less serious according to circumstances. Many persons have suffered in this way, and the injury is permanent, who nevertheless enjoy good health, and who are far from believing themselves dyspeptic. It is a singular self-preserving principle in the animal economy that can permit such a partial encroachment on a vital function. Unlike the chemical laboratory, where we may attempt to imitate vital action, or to investigate it, when one part of our apparatus fails, the whole must be laid aside. As an example of this partial derangement of the digestive organs, I will state the contraband bill of fare of a person who considers himself in perfect health, and whose case I have studied with a view to this research.

The first article he remembers to have distressed him, was coarse corn bread. During his childhood, if he ate this bread, it produced painful acidity. This incapacity, or antipathy, of the stomach, has never been overcome. The next article that hurt his digestion was boiled codfish, eaten

with drawn butter and boiled potatoes, when he was recovering from a severe fever. Subsequently, he has added, by various acts of imprudence, to his forbidden list, smoked herrings—cabbage—turnips—onions—roasted pig, and buckwheat cakes. This list could probably be enlarged, but it is sufficient for our purpose. If every article of food affected him as unpleasantly as every one of this forbidden catalogue, he would be in a state of confirmed dyspepsia.

The acquired antipathies of the stomach survive the attacks of acute diseases—long abstinence—change of climate—change from a sedentary to active life—and protracted voyages. If the offending cause has not been injudiciously repeated, nor the injury so considerable as to be attended with serious inconvenience, the stomach will in some degree recover its power. The chronic character of this injury illustrates, in a striking manner, the obstinate character of the disease under consideration: the history of one article of food which has impaired the tone of the digestive organs, is but the record of one stone in the monument of this protean malady.

Things that hurt the digestive organs, do not always produce a sensible effect in the stomach, but several hours after eating, we first notice a slight degree of feverishness, thirst, and pain, more or less referable to the duodenum—perhaps a looseness comes on, and the derangement disappears with a slight prostration of strength, and transient illness. A gentleman in good health ate a lobster with his dinner, having dined rather freely at five o'clock. He retired to rest at eleven o'clock, without having experienced any inconvenience, but awoke at two o'clock with pain in his bowels, thirst, and fever, and he was at once sensible that the lobster had injured him. I suppose this was a case of duodenal indigestion, and that the offending food had passed with impunity the pyloric orifice of the stomach—nor was the injury the result of any thing specifically injurious in the lobster, but to its having passed without due preparation from the first to the second digestive compartment. The quality of the food, was not so much in fault as the

quantity. Almost any thing may be eaten in moderate quantity by those who have not abused their digestive organs, while many innocent things are forbidden to the votaries of gluttony and excess. In the case above mentioned, the indisposition was of short duration, and the patient's health seemed to be restored—but although two years have since elapsed, he has not recovered his former fondness for boiled lobster. This, however, was considered a very slight derangement of the digestive system—and so, indeed, it was, compared with many we daily witness in the forming stage of dyspepsia. Those who have vigorous organs, sometimes reject offensive and oppressive food, without any apparent injury more than they would have sustained from an active portion of medicine. In such cases, the offending cause is wholly removed by a sudden violent effort. The surfeits of children often produce urgent, but temporary, symptoms. They have more versatility than adults, and recover more rapidly. From a physical conformation more analogous to childhood, women are oftener affected with slight, transient, dyspeptic symptoms, than men. Their digestion is more frequently disturbed by mental causes, and they are more subject to gastrodynia and spasm—but like children, their recovery is more rapid, and the antipathies produced in them by errors of diet are usually of a less permanent character.

A predisposition to dyspepsia may be denominated universal—because a great abuse of the digestive organs will, in all probability, always produce it. Local diseases, or those that affect the whole system—excessive evacuations—depressing passions—all causes which diminish the vital energy, increase the universal predisposition to this complaint, but the malady itself is always brought on by errors of diet. The digestive organs are debilitated by sedentary employments, especially when too much confinement is aggravated by neglect of cleanliness, and bad ventilation. Great mental application—irregular habits of sleeping and waking, increase the predisposition to this disease—and also among studious men I have observed, as a very com-



mon predisposing cause, the abuse of tobacco. Local diseases are often connected with this complaint, both as cause and effect, but this subject presents a range of inquiry too wide for our present limits, and we shall dismiss it with a single remark.

The symptomatic local diseases which occur in dyspepsia, seem to be curative efforts of nature. Sometimes they produce a diversion from the digestive organs, so considerable as to give time for the system to throw off the original disease: usually the local affection prevents, for a time, the rapid advances of the primitive one—but this is true only of cutaneous and phlegmonous inflammations, and not true as regards those sympathetic maladies which invade vital organs, or that universal sympathy of the nervous system, which so often takes place in melancholic temperaments, and constitutes that peculiar disease we denominate hypochondriasis—and perhaps many secondary, as well as idiopathic, local diseases, have no other than a hurtful influence on the digestive organs, while hemorrhoidal inflammation, and many cutaneous affections seem kindly to divert diseased action from the alimentary canal. Sometimes we notice diseased action in remote parts, alternating with derangements in the *prima viæ*, when it is doubtful whether any thing is gained by such an interchange.

A man of good constitution, aged twenty-two, who had never been troubled with any form of indigestion, had a slight gonorrhœa and hernia humoralis, which alternated with dyspeptic symptoms. The alternation was thus—the gonorrhœal discharge would occasionally cease—the testicles then became tender and swollen: when the tumefaction subsided, the duodenal portion of the intestines became affected with cholic pains. These alternations were sudden and frequent—abstinence from animal food, and rest, soon effected a cure.

The observations already made on the different portions of the alimentary canal, and their relative and mutually dependent action, enable us to explain the probably injurious effects of an indiscriminate exhibition of cathartic medicine.

If given while undigested food remains in any part of the canal, the increased peristaltic motion will displace the crude aliment, and it will become a cause of irritation, unless speedily expelled from the body. Hence the obvious propriety of fasting during the operation of cathartics. Even the common average water gruel should be given with some caution on such occasions—especially if the patient be dyspeptic. Warm water, or a slight infusion of chamomile flowers, should be preferred, and on no occasion should food be allowed, until the operation of the medicine is over. I allude to those cases where a full cathartic is exhibited. Laxative potions, or such as do not materially affect the stomach or small intestines, but which exert their influence principally in the cæcal portion, may be given with less precaution. The unnecessary repetition of active cathartics impairs the tone of the stomach and bowels, and is not unfrequently one of the predisposing causes of indigestion. Cathartics, therefore, should not be prescribed without a strict attention to diet. After the bowels have been briskly moved by cathartic drugs, some degree of costiveness follows the increased peristaltic motion, unless the dose was large, or in some way impaired the health so as to induce hypercartharsis. In this case, an unnatural looseness continues for an uncertain time. In considering the alimentary canal and its diseases, we should not allow ourselves to disregard these slight and ordinary phenomena, because they illustrate the physiology of important organs. In consequence of the exhibition of an active cathartic, the secretion of the mucous exhalants is increased, and the peristaltic motion is accelerated: afterwards there remains some deficiency of mucus, and a slower peristaltic motion. It is also to be presumed that there is induced, a slight or considerable turgescence of the mucous membrane, according to the degree of irritation the bowels have sustained. Thus the conjunctiva is more or less inflamed after an increased flow of tears, from whatever cause, and the schneiderian membrane is turgid after it has been stimulated by sternutatories. The whole system is evidently affected, and the health

somewhat disturbed, by a cathartic portion sufficiently powerful to move the bowels. Usually the pulse is sensibly quickened, the tongue slightly coated, and the appetite and digestive power impaired, during the operation. And why should we not expect such effects from substances offensive to the digestive organs, which the system seeks its own safety in expelling with all possible expedition?

The unnatural effort by which drugs are expelled from the alimentary canal, seems to be an injurious violence, and it should not be unnecessarily resorted to. The debility induced by the injudicious exhibition of cathartics, often predisposes to the complaint under consideration.

The unnecessary and empirical exhibition of emetics under the vague notion of removing bile from the stomach is also attended with injurious consequences, although from the reluctance of patients to nauseating drugs, as well as the obvious prostration and distress they frequently produce, they are not so frequently and indiscriminately employed as purgative remedies. Unfortunately for dyspeptic invalids, it is a common opinion that their complaint is caused by an excessive quantity, or vitiated state of the bile—and that this excessive or unhealthy secretion, finds a reservoir in the stomach, where it generates indefinite and numberless evils. But physicians know that the bile is only found in the duodenum, or below it, and that when misplaced, or thrown into the stomach by inverted peristaltic motion, it always excites vomiting. The stomach will not tolerate its presence a moment. Equally erroneous are the conclusions which some persons draw from the colour of bile rejected from the stomach by vomiting. Yellow is supposed to be the proper colour of bile, and any departure from that hue, is supposed to indicate “a very foul stomach.” Hepatic bile is always yellow, but the cystic contracts a green or other tint by stagnation in the gall bladder—and when it exhibits such varieties of colour, we should only infer that the inverted action had discharged the cystic bile. Our prescription for yellowness of the adnata, morning thirst, nausea, and slight feverishness, should not always



be an emetic and cathartic—but sometimes, abstinence from animal food, temperance and regularity. Very frequently the yellowness of the eyes, supposed to indicate a bilious complaint, is caused by strong and depressing emotions of the mind, as sorrow, anxiety, fear, anger, &c. In such cases it is preposterous to prescribe medicine of any kind, while the exciting cause remains. The frequent exhibition of any active drug, must of course be injurious, if it fails to answer the intention for which it was prescribed. It is not probable that any active medicine can be tampered with, and not inflict some injury on the organ to which it is unnecessarily applied. Those medicines resorted to for relief in the early stages of dyspepsia, are often injurious. Lime water—potassa—soda—magnesia—may all be so employed as to be very injurious. Vitality presents no obstacle to the corrosive action of potash or soda—when the excess of acid in the stomach is overcome, the alkaline caustics attack the villous surface of the stomach. An alkaline solution may act injuriously on the stomach without producing any painful sensation—perhaps a very slight degree of chemical erosion may not be of any moment—but surely we should not put into the hands of mothers, or allow the indiscriminate use of medicine, capable of producing such an effect. Some of the most obstinate dyspeptic affections have been produced by an unguarded use of pearl ashes and cider—and what physician has not seen the bad effect of alkaline solutions, given as an antiseptic in remittent or miasmatic fevers?

Tobacco injures the digestive organs by the waste of saliva, and by its effects on the nervous system. The placid intoxication it induces is followed by a degree of indirect debility, and a desire to repeat the poisonous dose. Although the impression is less powerful than that of opium, or alcohol, the nervous system suffers by its frequent repetition. It is injurious to dyspeptic habits by aggravating the predisposition to the complaint, and in heightening the morbid irritability of those who are labouring under the melancholic form of the disease.

*Treatment of Indigestion.*

When we consider the pathology of indigestion, or refer to our own experience on the subject, we are compelled to acknowledge that the cure must depend more on avoiding the predisposing and exciting causes, than in any direct operation of medicine. Recovery, in confirmed cases, is always a work of time. We should, therefore, regard the premonitory symptoms with great attention. When any article of food has been observed to offend the stomach, it should be for a long time afterwards most carefully avoided. The great importance of judicious dietetic treatment, must be my apology for several observations on this subject, of apparently trifling importance. Those who have delicate digestion, should take their food at regular, stated hours, in moderate quantity, without anxiety or interruption. The temperature of the room should be regulated, as an uncomfortable degree of cold is very injurious. After fatigue, or violent exercise, the invalid should not dine until the painful sense of weariness, or the hurried circulation, has considerably subsided. No violent muscular exertion, or even moderate labour or walking, is proper, directly after dinner. The mental excitement of public and ceremonious assemblages, is very unfavourable to vigorous digestion. The custom, almost universal on the continent of Europe, of taking strong hot coffee after dinner, is allowable in many cases of weak digestion, but it is much better to have a cup of hot tea about three hours after dinner. I have not been able to discover that a moderate use of tea or coffee is injurious in these cases, unless some previous use of them had disqualified the digestive organs, as in other cases of errors in diet. Hot water alone is a grateful stimulus to the stomach, and caloric, in some form, seems to be nearly an indispensable part of our diet. I imagine that the almost universal consumption of tea and coffee, depends, in no small degree, on the more universal propensity, and even necessity, of taking something of a high temperature into



the stomach. As an animal, this is one of our necessities, and we may be, with propriety, described as "fire eaters."

Heat is not only grateful and refreshing to dyspeptic invalids, but it is proper and well adapted to the state of the digestive system, on which their disease depends. The common bugbear, therefore, about the bad effects of tea and coffee, I contend may be in a great degree removed from the list of restraints and terrors that wait on dyspepsia. I do not intend to say that strong coffee is not liable to be taken to an injurious extent. It is a stimulus of a peculiar and specific kind, and may not be used in excess without producing a chronic incapacity of the stomach. Those who have already acquired this antipathy, as many have, should by no means attempt to overcome it, when threatened or afflicted by indigestion.

In considering the treatment of dyspepsia, the first and most important prophylactic indication that presents itself, and one that cannot be too strongly insisted on, is that of preventing, by abstinence, the undue labour of the digestive organs. By materially diminishing the quantity of food, and abstracting all unnecessary stimulus, we give comparative rest to the stomach, and time is allowed for the natural restoration of healthy action. By giving aromatics, stimulants and tonics, in the incipient stage of indigestion, we relieve present symptoms at the expense of subsequent debility, and art irritates the very process which caused disease—to wit, an overstimulation. Wine or alcohol is never beneficial in the early stages of indigestion—and, as the disease is always chronic, we cannot insist too strongly on a total abstinence from all diffusible stimulus. If the digestion is considerably impaired, all spiritous liquors should be at once forbidden. Particular cases may occur which are exceptions to this remark—they are deviations from a general rule. If stimulus has been used in excess, it should be at once, not gradually withdrawn, and the diet should be at the same time reduced to a correspondence with the low digestive powers. Much may be done in the early stages of dyspepsia by abstinence, and if to this is added change

of air, agreeable mental excitement, and bodily exercise, physicians would not be often called upon to prescribe for one of the most obstinate and distressing diseases. In the second, or more confirmed stage of indigestion, we meet with chronic and troublesome vicious habits, which afford new indications of treatment, and unfold the nature and obstinacy of the enemy we have to encounter. Instead of occasional indigestion depending on palpable errors of diet, the complaint becomes constant, and the general health begins to be sensibly impaired. Emaciation, depression of spirits, slow bowels, a sense of uneasiness referable to the stomach, and always aggravated after eating, cardialgia, tenderness of the epigastrium, usually attend this stage. The tenderness of the epigastrium, though one of the most constant, is not among the earliest symptoms. Perhaps the most universal and constant symptom of this stage, is costiveness. In obviating this difficulty, it is deemed highly important to do it without having frequent recourse to active, full cathartics. Indeed a cathartic, however mild, does not appear to be a proper prescription, unless it be to answer some temporary purpose. The principal idea I wish to urge, in connexion with this particular indication, is the importance of exciting the needful peristaltic motion, without violently hurrying the alimentary matter along the canal so as to misplace it in the several compartments, and thereby causing inconvenience and morbid action, as before explained. The indication then is to aid the gastric portion in its preparation for the duodenal, the duodenal for the cæcal, &c. Drugs that excite nausea and vomiting when given in full doses, seem to exert a peculiar influence on the stomach when given in doses smaller than is sufficient to produce sickness, and it is on such that we should principally rely. Some of them seem to increase the digestive energy, and to prevent the food from paining the pyloric orifice of the stomach.\* This is not an observation susceptible of

\* The food in the stomach is never thoroughly digested, or converted into chyle—it is here only a preparatory process, which is perfected in

experimental illustration, on account of the situation of the stomach, and its contents necessarily concealed from our view. The first inconvenience caused by defective gastric digestion, and displacement of unprepared aliment into the duodenum, is a pain affecting that portion of the intestines. I have often succeeded in preventing this cholic of indigestion, by giving directly after eating a small quantity of ipecacuanha made into a pill with soap. A continued use of the same simple remedy, has in many instances, removed costiveness of long standing, which seemed to be owing to defective peristaltic motion in the cæcal intestines. When well dried, these pills dissolve slowly in the stomach, and may be given with more freedom than would be supposed without some trial. I am not, at present, prepared to enter minutely into the rationale of this prescription, but I am confident that it sensibly increases the digestive power, and it apparently gives steadiness and vigour to the peristaltic motion, without acting sensibly as a cathartic—nor does it leave behind it that tendency to aggravated costiveness which is apt to follow the exhibition of active cathartics. I have noticed a similar result from the use of other nauseating medicines, but I have not had an opportunity to prosecute this inquiry.

Tartarized antimony, in small doses, has an effect similar to that of ipecacuanha in relieving slight oppressions of the stomach by directly increasing the digestive power. Even a full dose of tartarized antimony does not wholly suspend digestion, as the following experiment demonstrates. A young gentleman in perfect health, took, dissolved in half a pint of warm water, three grains of tartarized antimony—immediately afterwards he ate a moderate dinner of roast beef, boiled potatoes and bread. After dinner he felt drowsy, but not nauseated. He laid upon his bed, and in a few moments slept. About an hour afterwards, being an hour and a half from the time he swallowed the dose, he awoke with sick-

the duodenum, and this perfection, or real assimilation, cannot be attained until it receives the bile to analyze it.—*Faithhorn.*



ness at the stomach, and he immediately vomited. The dejection was large and bilious, but it contained no aliment. The nausea was of short duration—he slept again, and awoke sometime after refreshed, and felt no other inconvenience from the dose.

Sea sickness, it is well known, remarkably increases the appetite and the digestive powers. Ladies, and persons of delicate digestion, are fond of strong meats and cookery at sea that they abhor on land. In treating cases of indigestion, we may induce an action apparently analogous to the degree of sea-sickness of which I speak, by giving emetic drugs in a quantity below that which would cause sensible nausea. The stomach will, I believe, in all cases bear this prescription. After a full meal nausea is not easily induced, and if the stomach is sensibly oppressed, or if acidity comes on, the relief afforded by nauseating drugs is great and immediate. For this purpose I have found no medicine so convenient and proper, as a pill formed of soap and ipecacuanha. The pills should be kept until perfectly dry, when they dissolve slowly in the stomach, and they may be given with considerable freedom. As much of the mass as contains three or four grains of ipecacuanha may be given directly after eating, when we wish to prevent indigestion, or from one to three grains may be given to relieve the acidity at any time when the evil is present. A dose of two grains, or in some instances one grain, or half a grain, may be thus prescribed, and repeated every half hour, until the distress is relieved or a slight nausea comes on. It is desirable, however, never to excite nausea, lest the patient become disgusted with the prescription. In cases of simple idiopathic dyspepsia, costiveness always attends, either as a constant or an occasional symptom.

When ipecacuanha is given in the manner above stated, and a dose of two or three grains is added at going to bed, for at that time it may be given without inconvenience, and the prescription has been continued several days, the effect begins to be visible in the bowels, and the costive habit gradually disappears without any evident cathartic operation. The stools become free, though not fluid.

One of the most prominent indications in the treatment of indigestion, is to obviate the immediate inconvenience, which is caused by the presence of undigested food in the alimentary canal. In the early stages of the disease, I suppose this relief should always be attempted by the use of such drugs as in larger doses would produce vomiting—never, by the exhibition of diffusive stimulants, tonics, or narcotics.

In cases where the diseased action of the stomach has been a considerable time established, the stools assume an unnatural colour, there is tenderness, and sometimes fullness of the epigastrium, and other indications of a morbid state of the liver. The blue pill, or some other preparation of mercury, is now decidedly indicated, as recommended by Mr. Abernethy—but great caution and attention is necessary to prevent it from being too suddenly introduced into the system. Two or three grains of the blue pill is sometimes too large a dose. The mercurial medicine should by no means be allowed to move the bowels. One grain, or two grains, of the blue pill, may be given every night—but often this is too much, and I have observed several cases where it seemed to be highly useful, when no more than one grain of the blue pill was given every second or third night at going to bed. If the mercurial moves the bowels, I have usually considered it as intimating the propriety of diminishing the dose to one-fourth, or one-sixth the quantity, or more frequently of omitting it entirely, until the system has recovered from the effect of the dose already given. In delicate habits it is unfortunate, and affords an unfavourable prognosis, when a small quantity of blue pill acts as a cathartic. In the treatment of indigestion it seems to be as important that the mercurial remedy should not excite the peristaltic motion, as it is that the emetic alterative, (if I may so call it,) should not excite vomiting—mercury in this small and cautious way, undoubtedly acts as a stimulant to the glandular system, and its agency is more particularly evident in the duodenal portion of the alimentary canal. The liver, so peculiarly amenable to mercurial influence



being the great auxiliary organ of this portion of the canal, on minute investigation, we shall, probably, find the morbid derangements which indicate the guarded use of mercury, are always referable to this compartment.

Where the accumulation in the large intestines is obstinate and urgent, it is sometimes advisable to remove the temporary inconvenience by exhibiting a cathartic of aloes or rhubarb. Aloes is peculiarly adapted to this purpose, because it stimulates the cœcal portion more than it does the stomach or small intestines, and it acts without inducing much debility. We never forget, however, when we prescribe it, its tendency to bring on hemorrhoidal irritation. As a general rule, aloes and rhubarb, or any other cathartic drug in full doses, should not be had recourse to in this complaint without the most evident necessity. I do not intend to object to the occasional exhibition of cathartics, with a view to remove febrile symptoms, sudden determination to the head, &c. but merely as a remedy for costiveness, or a general curative process in cases of indigestion. After aloes, if we hope to avoid an aggravated degree of costiveness, we should prescribe, for several days, very small doses of rhubarb, jalap or ipecacuanha—either of these roots, previously powdered, may be formed into a pill with water alone, or water and soap. These pills should contain no more than one grain of either drug, and should be given at such long intervals as not to be perceived by any sensation of the patient, and should be continued until they induce a slight degree of looseness, thus preventing the constipation so sure to follow a full dose of physic. The derangements of the digestive organs have not a sudden termination, by crisis or otherwise—I mean the derangements which constitute the proteus dyspepsia. But there are transient derangements which require prompt and active management—yet our prescription should not be made even in such cases, without considering what part of the alimentary canal is the seat of the complaint. A delicate female, aged sixteen, subject to dyspeptic cholic, made her dinner principally of salted beef, which had often pre-

viously caused indigestion, but had not until now brought on an attack of cholic. Immediately after dinner, it being a mild sunny day in winter, she walked in the street until she was considerably fatigued. She was somewhat oppressed by the heat of the sun, and she began suddenly to complain of cholic, which increased with such rapidity that she was not able to reach her home. An emetic was given which brought up some pieces of undigested food, but did not afford relief. The emetic was followed by a cathartic, and every requisite effort was made to overcome the inverted peristaltic motion, but the vomiting and distress continued unabated. In this case the emetic first exhibited was not sufficiently active to force up from the duodenum the misplaced undigested aliment. Perhaps the difficulty had been increased by her long continued exercise, so that it was necessarily more difficult to overcome. The effort of nature still seemed to intimate the most natural mode of relief, by a continued but unavailing effort to vomit. Circumstances rendered it necessary to remove this patient to her own house the same evening, and the motion of the carriage over a rough pavement evidently aggravated her distress. Notwithstanding the most diligent exhibition of all the common remedies, and two copious bleedings, her situation became almost desperate on the fourth day, when she was fortunately relieved by a tobacco enema.

The common attacks of cholic, misnamed bilious, are supposed to be frequently of a similar nature, and to depend on indigestion. The disease comes on suddenly—is attended with acute suffering and great danger. The treatment should be prompt and vigorous. Early in this disease, an emetic, by inverting the motion of the duodenum, will perhaps return the misplaced aliment on which the attack depends, and it is therefore a proper remedy. If the cause does not yield to an emetic, it should be followed by a cathartic, with a view to hurry along the canal the offensive substance. The system should, in some cases, be guarded against local inflammation, by blood-letting, &c. Although sudden attacks of cholic may strictly depend on

indigestion, yet the treatment should be similar to that of the chronic morbid state of the digestive organs we are endeavouring to describe, under the general term dyspepsia.

In sudden derangements of the organs, on which the pain depends, the irritating cause is present, and when removed, if speedily removed, the morbid action ceases—but if allowed to remain, the effect on the alimentary canal may be that of inducing the state of disease contemplated in our general view. Active remedies, such as full emetics and powerful cathartics, are undoubtedly indicated in cases of cholic from sudden indigestion.

In the melancholic form of dyspepsia, the treatment must be varied according to the endless train of circumstances incident to this malady, and which it appears difficult to discriminate under any general arrangement. Yet there are many practical rules, which may be considered of universal application. Dyspeptic patients should be advised, if practicable, to take exercise in the open air—to avoid a confined or overheated atmosphere—to sleep in a well ventilated apartment, and under light covering—to observe regularity in the hours of eating, and to diet sparingly—to avoid the abuse or indiscriminate use of drugs, such as soda, magnesia, lime water, emetics and cathartics, and above all, to abstain from narcotics, and alcohol. Long voyages, and a residence in a milder climate, to those who have suffered by the rigid winters of New England, and a cooler climate to dyspeptics from more southern latitudes, may be recommended.

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ART. II. *Brief Account of the History and present State of the Pennsylvania Hospital.* By BENJAMIN H. COATES, M. D. five years a Pupil of that Institution.

AMONG the objects commanding the attention, and naturally exciting the curiosity, of medical men, none are more



conspicuous than those asylums in which the sick are accumulated for protection and cure, and for the advancement of our profession. In the number of these, a conspicuous rank, especially with Americans, will always be held by the Pennsylvania Hospital. This establishment, also, can hardly fail to be an object of general interest, both from its age, and from its having been probably the first example, on a scale of any extent, of the practicability and utility of such establishments in our country. It affords a good instance of the progressiveness so general in most of our valuable institutions, at the same time that it stands as a splendid monument of private liberality. Partaking both of the imperfections of the age in which it was planned, and of those arising from the circumstances in which its progress was made, it should never be forgotten, in contemplating those improvements afforded by the general advancement of human knowledge, and the growth of wealth and civilization in America, that praise and veneration are due to this as the pioneer in the path of benevolence, and the living example by which others have been modeled and directed. In pursuing our narrative, we shall probably find marks of a more improved state of mental culture, and of social energy and wisdom, than is perhaps generally supposed to have existed, and shall possibly not have so much cause to congratulate the present generation on their superiority in these respects, to their revered predecessors. How much more honourable is it to leave such a memorial of labour and useful ambition, than any thing which remains to us of the local and petty, but stormy politics of the popular and proprietary disputes of the colony !

An intention of founding an hospital, seems to have been entertained as early as 1707, when it is known to have been agitated at a meeting of the people called Quakers. Application was made to the proprietary for a charter and assistance, at the same time when this was done for the "town and county school," being the same now under the care of a corporation chosen from that religious society, and whose principal establishment is in Fourth street, Philadelphia.



The school was erected, and set in operation, but the difficulties in which Penn's liberality had involved him, and which compelled him, in the following year, to mortgage the province, are supposed to have been the cause of the other benevolent design proving abortive.\*

We have not heard of any renewed attempt to found an hospital, till the end of the year 1750. It is said that the legislature had, before this period, provided a place for the care of sick strangers, although the accounts imply that an "equally tender care" had not been bestowed on the domestic poor in the same predicament. It is well known that the number of paupers was then extremely small, if, in fact, there can be said to have been any. At this time, sundry persons, and in particular, the late Dr. Thomas Bond, observing the distressed situation of the poor, and particularly of lunatics, procured a petition to the legislature, which was acted upon in less than one month, by an act of incorporation and a grant of money.

A subscription was immediately raised, and the contributors met 6th month, (June) 1st, 1751, and elected twelve managers and a treasurer. We annex, not without some interest, a list of their names. Managers, Joshua Crosby, Benjamin Franklin, Thomas Bond, Samuel Hazard, Richard Peters, Israel Pemberton, jun. Samuel Rhodes, Hugh Roberts, Joseph Morris, John Smith, Evan Morgan, Charles Norris. Treasurer, John Reynell. In the next year, to fill vacancies that had occurred, we find the names of Isaac Jones, William Griffiths, and Thomas Lawrence, jun. In the month of August, the subscription being proved to exceed two thousand pounds, an order was obtained for an equal sum, in pursuance of the legislative grant.

Application for assistance having been made to the proprietors, Thomas and Richard Penn, a different charter and lot of ground were offered them. The lot in question being,

\* An occurrence took place about this time, singular in several respects, and illustrative of his difficulties, as well as of the small value of his American property. We mean an actual agreement with Queen Anne, to sell the province of Pennsylvania for 12,000 pounds.

however, claimed as public property, and being, in fact, a part of the north-east public square, so unprofitable a grant was declined. A subsequent correspondence with the proprietors, terminated in the liberal gift, on the part of the latter, of the northern side of the present square on which the Hospital stands. Two-thirds of this, situated on the south side, had then been purchased by private subscriptions, and the donation of the proprietaries included the remainder.

Besides this square, a similar one to the east, nearly the whole of a smaller one to the south, half of another to the west, and a lot to the south-west, have all been purchased at the then low prices, by the managers of the Hospital, and are kept open for purity of the air. They are employed for the support of the milch cows, and occasionally farmed. They form the finest collection of open ground within the city—amounting to upwards of fourteen acres.

The grant of the legislature was lent at interest, on good security, and suffered to accumulate till the building should be commenced—and in the meanwhile, a house\* was hired, and was opened for patients, 2d month, (Feb.) 10th, 1752. The physicians at first supplied the medicines employed, gratis, from the stock it was then their custom to keep—but near the end of this year an apothecary's shop was opened in the house, and a subscription of 113*l.* 18*s.* raised among “charitable widows and other good women of the city, to pay for it.” Medicines and advice were also furnished to “out-patients;” which was the first public dispensary ever opened in this city. This custom was continued, and for some time on a very large scale, a physician being employed, on a salary, to attend exclusively to this department. In the year 1815 the present dispensaries for Southwark and the Northern Liberties being created, in addition to that already in operation for the city, thus completing four distinct establishments, that belonging to the

\* On the south side of Market street, above Sixth street. As a specimen of the times, this cost forty pounds per annum, including about one-third of a square.

Hospital was dropped. Within twenty years, sixteen thousand and sixty-three patients received the benefit of this dispensary, of which nine thousand five hundred and thirteen were within the last seven years.

A variety of resources were, at this early period, resorted to for raising money. Charity boxes were kept at the managers' houses, and jury and other small fees, as well as the compensation allowed for signing paper money, increased their funds. Dues, unclaimed, and expired by limitation, to some amount, were granted by law, to be added to the capital stock. From the British Parliament they received all the unclaimed funds arising from the sale of the lands belonging to the London Land Company, amounting to near 23,000*l.* currency.

On the 28th of the 5th month, (May,) 1755, the east wing of the present building was commenced, by laying the south-east corner stone—a large block of marble, having the following inscription, by Franklin.

“In the Year of Christ  
MDCCCLV.

George the Second happily reigning,  
(For he sought the Happiness of his People,)  
Philadelphia flourishing,  
(For its Inhabitants were public-spirited,)  
This Building,  
By the Bounty of the Government,  
And of many private Persons,  
Was piously founded  
For Relief of the Sick and Miserable.  
May the God of Mercies  
Bless the Undertaking.”

This stone was laid in great form by the President, accompanied by the managers and physicians, and by a great concourse of citizens—in addition to whom the schools were broken up, and all the children of an age to recollect it, sent to be witnesses. A message had been sent into Chester county, to the first individual born in the colony after



the arrival of William Penn, to induce him to lay the corner stone—which he refused, but attended at the ceremony.\*

The roof was raised on the 27th of the 10th month, (October,) of the same year. Almost all of a large number of tradesmen, and even of the labourers, among whom the purchases and work were divided, contributed a share towards the undertaking.

From this time forward the institution was regularly open, and the number of sick, which amounted during this year to eighty-nine, was increased uniformly, in proportion as funds were furnished for their support. The number of pauper patients was greater a short time previously to the revolutionary war, than for a long period after—as, during that struggle, large sums were lost to the institution, by the depreciation of paper money. After the peace a fresh subscription was raised to a considerable amount, so as to replace, in part, this loss—and in the end of 1796, the western section of the present building was finished, and opened for the reception of lunatics. Finally, in the 2d month, 1804, the central building was so far completed as to allow lectures to be delivered, and an operation performed in the circular room appropriated to them in the third story.

The house, in its present form, together with its appurtenances, occupies the whole square between Eighth, Ninth, Spruce, and Pine streets—and fronts to the south, and on the latter. It consists of a central square part, united by two long buildings to two wings, running north and south, and parallel with the sides of the original square. The centre is about sixty-three feet in length by sixty-one in depth—the eastern long building is eighty-one feet by twenty-seven, and the east wing twenty-eight feet east and west, by one hundred and eleven in the north and south direction. The western long building is eighty one feet by thirty-three feet six inches—the west wing, thirty feet by one hundred and eleven. The length of the whole is two hundred and eighty-three feet.

The whole, together with additional erections to be men-

\* Minutes of the Hospital.



tioned hereafter, forms part of a hollow square, with ample intervals for the circulation of air—and it has been proposed to enlarge the buildings on this plan, by additions in a line with each wing. For the further attainment of this purpose of ventilation, have been procured and kept open, those lots of ground which surround the Hospital on three sides, and for retaining which, many persons have censured the managers. The advantages resulting from this caution are palpably apparent at every moment, in the exemption of the institution from those diseases peculiar to such establishments in Europe. Such things as an epidemic typhus fever, or an hospital gangrene, so destructive in similar institutions in other parts of the world, are absolutely and altogether unknown to the Pennsylvania Hospital.

The plan was formed in the first instance so as to admit of successive enlargements, and was similar to what is now executed, with the exception of the width of the long building joining the centre to the west wing. This was made about seven feet more than in the opposite side, to admit of making a double row of cells, as a mode of economising funds destined for a charitable purpose. It is now doubted by some whether this principle be not erroneous—and the advantages of airiness and light obtained by a single row of cells, of more importance than such an increase of the number. It must be recollected, that at the period when this plan was adopted, the pecuniary resources of the country were by no means so great as they now are, and would not justify any unnecessary expenditure. The additional width is far from diminishing the regularity and effect of the whole to the eye; and no person without being aware of the fact, notices the disproportion.

Of the older section of the building, extending from the eastern extremity to the central square, the first floor is appropriated to surgical patients generally, the second to medical, and the basement to dining rooms for the sick and surgical patients, besides a range of old cells, of which we shall speak hereafter. The square part in the centre is occupied principally by the family accommodations and offices. The basement story contains the kitchen,

a servants' chamber and two dining rooms. On the first floor are the library, which serves also for the managers' office, the apothecary's establishment, and two rooms occupied by the family. On the second floor are the lying-in ward, and the chambers of the medical men of the house, and of part of the steward's family. In the next story is an elegant amphitheatre for surgical operations and for lectures, illuminated by a sky light—and on the same floor are three wards, employed in part for the reception of patients operated on. The west end is exclusively devoted to the insane, containing two rows of cells in each story, including the basement, of the long building—and about sixteen cells, with eight large, handsome rooms, in the wing, besides the garrets. Upwards of seventy rooms in all, are employed for this description of patients, in the west end—and occasionally, use has been made of a part of fourteen old cells, forming a single row in the basement story already mentioned, of the east end. It is to be lamented that the ideas of a lunatic asylum, prevalent at the time of planning the Hospital, induced the founders to place cells partly below the level of the ground. An area of about ten feet wide is excavated on both sides, completely round the west end, the centre, and the cells of the east end—thus rendering those cells whose floors are below the ordinary level of the ground, dry and comfortable—the court-yards and grass plats being visible from the windows.

In a line with the eastern wing, and on the north side, is situated what is called in Europe a lock hospital, three stories high, neatly built, comfortable, and capable of containing fifty patients.

A house for washing, ironing, and some culinary processes, occupy a somewhat similar station at the west wing. A building containing West's celebrated picture of Christ healing the Sick, as also the green houses, and, till lately, the anatomical museum, is situated opposite the north side of the Hospital, and fronts on Spruce street.

The prospect from all parts of the buildings forming this asylum, is probably more agreeable to the eye than in any similar one in the world. Besides the consideration of ven-

tilation, an object to the importance of which we have already alluded, the guardians of this institution have always had in view the benefit derived by the sick from agreeable impressions made upon their minds. This is consulted by great general attention to neatness, and an air of comfort in all the appointments of the house—and among other things, by the prospect from all parts of it. Every window to which a patient has access, opens upon a garden, and most of them upon a highly agreeable one—the eye thus meeting, instead of dull or disagreeable masses of brick, with the freshness and verdure of nature.

In connection with this may be mentioned several circumstances, rendering the Hospital pleasing or interesting to visitors—such as its imposing situation in the midst of so many fine squares—the grandeur of a range of lofty buttonwood trees,\* which surround the lot on which it stands—and several articles of ornament, nearly all of which are the gift of private individuals. Among these are a green house, and several relics of William Penn. During the warm season, the exotic plants are arranged in front of the house, round a semicircular walk, producing, together with the overshadowing buttonwoods, and the ornamental trees of the adjacent court-yards, a rich and mellow relief to the eye, said to resemble that of a garden in the West Indies. There has also been presented to the institution a scion of Penn's famous elm tree, sometime since destroyed at Kensington, which is said to have overshadowed an Indian treaty, and is celebrated by the classical pen of Ramsay. This is now a thriving young tree, in the west lot. It is to be wished that the race of this tree may never be suffered to be lost. It is certainly accompanied with better recollections than the famous tree of Romulus, of which the Romans took so much reverential care. Penn's great oaken chair is also preserved—having been brought from his old residence of Pennsbury Manor, in Bucks county. For the splendid donation of a fine statue of this eminent man, the

\* These trees were planted in the year 1756, by the late Hugh Roberts, of this city, who presented them to the institution.



institution and the city are under obligation to John Penn, Esq. of Stoke Pogeis, in England, a lineal descendant of the proprietary and founder. This statue, which I am informed by an eminent artist of this city, is to be considered a good authority for Penn's likeness,\* was originally made for Lord Le Despencer, who erected it on an ornamental building, employed as a saw mill, on his superb grounds at High Wycomb, in England. After that nobleman's death, it was purchased by the donor, and presented to the Hospital. It is of lead, bronzed—and stands on the south and ornamented front of the house, amid the before mentioned semicircle.

In addition to the buildings already enumerated, there are a fire proof stable, and a large brick erection, just completed—the objects of which are various. The lower story is to be employed for workshops and offices, and as a substitute for the existing stable—which is then to be converted to the use of the deranged, affording a day room for the women, and a number of cells. The second story forms a very large day-room for the exercise and employment of the men lunatics—and the insufficient chamber at present occupied for this purpose, will then augment their lodging room.

We shall now proceed to speak of the objects and operation of the institution. Our bounds, however, will force us to condense. Not long since, the main purpose of receiving pauper patients was fulfilled, as mentioned above, to a smaller extent than before the revolutionary war, from causes affecting the amount of the capital stock. The city Alms-house, during this period, received many paupers who would formerly have been admitted to the Hospital. The number accommodated at one time, has, however, been recently increased to ninety.

\* Clarkson, in his life of Penn, expresses doubts of the authenticity of the likeness in this statue, *vol. ii. p. 267, Am. edit.* He does not mention his grounds for calling it in question. The best likeness of Penn extant, according to this writer, is the bust executed by his friend, Sylvanus Bevan—a copy of which, by the author, is now in the Loganian Library.



The funds arise from the interest of the capital stock, from the board of pay patients, and from a few smaller incidental receipts. The profits from West's picture are, as was to be expected, greatly reduced. Several methods by which, during the infancy of the institution, and in an economical age, small sums of money were raised, have been abolished, as interfering with the attention necessary for the judicious disposal of larger and more important concerns. Among these means were the sale of ice, of butter, and of various vegetables.

A considerable number of patients are sent here, at the lowest rate of admission, by those who administer the United States fund for the relief of sick seamen; from which a common but erroneous impression has gone abroad, among those connected with the sea, that a share of this fund was devoted to the Hospital. This belief has given rise to frequent irritation towards the Hospital, on the part of those who have applied at the Custom House for the benefit of the foundation, and been refused. Having paid a share of what is called "Hospital money," out of their monthly earnings, they conceive they have a *right* to admission, and that the Hospital is to blame for their not obtaining it. This, however, is not the case, their claim being solely on the United States; and the Hospital receiving only such as are sent to it, at a stated rate of board.

This source of relief to seamen, and increase of numbers and revenue to the Hospital, has, however, been also very greatly diminished since the late exertions to economise in the administration of the United States treasury.

The lunatic department, the principal object for which the institution was first set on foot, has long been crowded. It contains about ninety, which number, with the constant fresh applications for admission, render it particularly desirable that the space employed for this purpose should be enlarged. About one-third of these may be females.

The treatment of the deranged is well known to be one of those branches of medical practice in which the greatest

reforms have been effected in modern times. This change has been fully completed in the Pennsylvania Hospital. The mild and humane temper of our ancestors at all periods prevented these unfortunate patients from being treated, in this institution, with the brutality well known to have been employed in some foreign mad-houses; and besides being open to visiters in general, an express law gave power to the chief justice of the state to examine the condition of every deranged person in the house. Still, however, the erroneous and harsh opinions then generally received, operated here as elsewhere to produce a more severe treatment than was necessary. We are not informed of the existence of a period, in which punishment by blows, a treatment recommended, as is well known, by the high authority of Dr. Cullen, has ever been permitted here. Still, however, much of the appearance of a prison was preserved; the original cells in the old part of the building, which were the only ones employed previously to 1796, as well as one range of those erected since, were partly sunk below the level of the ground; patients of this description were kept very generally confined to their rooms; chains, and the large strait-jacket, were frequently employed, and visiters were suffered indiscriminately to walk through the passages, and see many of the confined. Within the memory of the writer of this article, a period, as regards the institution, of about eighteen years, all these abuses, except that arising from the construction of the building, have been corrected. The intelligence and humanity of the managers and physicians, among whom we may name the philosophic RUSH, effected an entire change; and it has been followed up, especially within the last four years, with energy, knowledge, and judgment. The most unpleasantly situated of the old cells are devoted to other purposes—the patients are entertained during the day either in large convenient rooms, or, when the weather permits, in agreeable shady court-yards, in the open air.

Employment is found for a considerable number. The use of metallic chains is forbidden—the substitute for them,

employed when necessary, being composed of links of strong bend-leather, with Sellers and Pennock's patent hose-rivets, an extremely well-contrived apparatus—the large strait-jacket is almost universally replaced by several ingenious substitutes—and visitors are excluded, except those of a suitable class, and these accompanied by proper conductors.

The improvements in the condition of the deranged are among the most interesting circumstances which we have met with in the preparation of this sketch. The greater part of the patients sleep in separate cells—many of the men, however, pass the night in large rooms, in company with each other, and with attendants. At an early hour, they are taken to a common breakfast, and they then repair, if the weather be suitable, to their court-yard, if otherwise, to the day-room, where they continue, with the exception of meals, till sun-set, when they are reconducted to their sleeping-rooms. The sexes, throughout the whole day, are kept separate. We here speak only of the ordinary patients. Some are permitted the liberty of the whole portion of the house, devoted to patients of this class—and of a separate yard, denominated the convalescent yard—a small number of others, being selected from among those who are supposed the most to regard and be benefited by such an indulgence, have a separate table, at which the female superintendant of this department presides. This is found to be both highly gratifying to their feelings, and beneficial in reducing their minds to a more tranquil state.

Much pains have been taken at different times, to obtain suitable and sufficient employment for the patients of this description—but the situation of the Hospital prevents this being done to the same extent that it might if the establishment were in the country. Conveniences in this respect are among the most important advantages of a country situation. Some of the men are employed, however, about the business of the house—thus all the ordinary carpenter's work, which is no inconsiderable amount, is performed by a patient. It is in the female department,



however, that this design is most completely fulfilled, nearly all who are capable of it being employed, during a portion of the day, at needlework. It is no more than justice to say, that much is owing, in improving the condition of the deranged, and particularly of the females, to the care and assiduity of the present female superintendant. The presence and oversight of a woman of staid but kind and judicious habits, is an invaluable advantage to those suffering under this heavy affliction. This is felt and acknowledged at those asylums where the comfort of the patient has been made the *principal* object.

The cells are warmed by fire-places completely inclosed within the wall, and opening in the passage—so that the inhabitant is rendered comfortable, without having access to the fire. The fuel now employed, throughout nearly the whole house, is Lehigh coal, which produces a great saving.

I understand, that the design has been started, should it be in the power of the managers, at some future time, to erect a lunatic asylum in the country. In this, the example would be followed which has been set us by the Friends' Asylum, near Frankford, and by the New York Lunatic Asylum. A situation in the country possesses many and important advantages, among some inconveniences, which are certainly, in the general, of inferior importance. The question of its preference, is connected with one which does not seem, at first sight, to have much relation to it—and that is one on which much has lately been said—whether insanity be chiefly a disease to be remedied by *moral* or by *physical* treatment. The reason of putting these two discussions on the same ground is, that, in the country, there are many more conveniences for producing calmness and a feeling of satisfaction in the minds of the afflicted—while, at the same time, it is far more difficult to obtain a comparison of sentiments with physicians of the most acknowledged qualifications. A resident physician is a matter of course—but unless his character be very high indeed, it is desirable to have consultations. And the practice of high salaries is not so much in fashion in our country, as to ren-



der it probable that physicians of the first standing for knowledge, experience, and judgment, will be recompensed for quitting the advantages of a city practice to take such a situation. Accordingly, we find that many of those who advocate a country locality, are also of opinion that what is called moral treatment, is of more importance than medical. I can hardly see how physicians can differ on such a point—but while on the subject, will go so far as to say, that the patients of a lunatic asylum may be safely divided into two classes—the more recent cases, requiring considerable medical treatment, and the more unpromising ones, which have endured for too long a period to render it adviseable, or which have already undergone it in vain. This distinction is amply recognised by those who are in the habit of attending them; and in this, insanity, as is well known, resembles many other diseases. During the early period, therefore, while there is a reasonable probability of medical treatment proving beneficial, I would keep the patient where he could have, with frequency and facility, the best advice. When, on the other hand, this means has been tried without success, the *moral* advantages of the country become of more importance, and he should be sent there. It would appear from the annual statements of the New York Hospital, that this is the principle acted on in that establishment; and we find, in fact, from the published accounts of the Friends' Asylums, at York, in England, and at Frankford, in Pennsylvania, in both of which institutions the moral treatment is brought to high perfection, and would seem to be, by some, principally relied on, that though it certainly has effected cures, it has principally excelled in *palliating* and diminishing the suffering of those unfortunates in whom this disease has continued during life.

Personal confinement, in the Pennsylvania Hospital, when necessary, is generally by means of straps, buckling over the arms, of sleeves inclosing the whole hand, and loosely fastened at the end to a waistband, so as in both instances to admit of as great freedom of motion as possible; and of the

improved leather chains, mentioned above. The comfort of the individual confined is greatly increased by these simple contrivances, especially by the last, which prevents the distressing sound of iron chains. The only punishment, as such, is subjection to a shower-bath. The number who require confinement by chains, or on whom clothes cannot be kept, is extremely small indeed; frequently only one or two being in the former, and none in the latter predicament.

Proceeding towards the east end, we meet with the lying-in ward, calculated for about fourteen patients. None but married women, of respectable character, are admitted here; other classes being referred to the Alms-house. This ward is an extremely neat and beautiful set of rooms, with a fine exposure; and is a situation much sought after by women of that description when in difficult circumstances. Its owes its origin to a donation from the First Troop of Philadelphia City Cavalry. The history of this donation is highly curious, and honourable to the donors. After the termination of the war of the revolution, in which this body acted, as is well known, as a life-guard to Washington, and after many delays, they received a sum of money as the amount of their pay from the government for military services; this they first resolved to appropriate to the establishment of a foundling hospital. After some time, it was proposed to deposite it in the charge of the managers of the Pennsylvania Hospital, for the same use. This body were, however, disinclined to such a foundation, in consequence of the distressing accounts which were then transmitted from Europe, of the mortality which took place in such institutions there.\* A law had been obtained authorizing the managers to institute a "*Lying-in and Foundling Hospital*," but after several conferences between them and the representatives of the First Troop, it was finally

\* Our readers may remember an account of the mortality in the Foundling Hospital of Paris, in a review of the state of the Parisian Hospitals, in the third volume of this Journal. It there appears that there was a terrific destruction of life till the plan of boarding children in the country was adopted.

concluded to omit the foundling establishment, and the lying-in rooms were opened as at present.

The women's ward, in the third story of the centre building, employed, in part, for the occasional reception of females operated on, is one of the most agreeable rooms in Philadelphia.

On the first floor of the east end, called generally the surgical ward, is the fracture ward, a room constantly open for the reception of recent accidents, which are always admitted, if within twenty-four hours of their occurrence, without formalities or security. This, together with the operating rooms, have been the theatre of many valuable improvements in surgery, and are the arena upon which much of the well-earned reputation of Dr. Physick was acquired. It forms, probably, the best surgical school in the United States: a constant series of accidents and cases for operation being, with few intervals, introduced. Every patient on this and the upper floor has a drawer, in a bureau, for his clothes, the use of a rug by the bed-side, and a comfortable bed and bedding. Curtains are not employed, from a fear of their impeding the circulation of air and harbouring dirt and insects. The custom of the country being also against it, it is a luxury which few or none of the patients have ever previously possessed in the course of their lives. The floors of these rooms, as of the whole house, are covered with white sand; and when this is done, as is often the case, in ornamental figures, it produces a peculiarly neat effect. Machine beds, with improvements, have been for many years in constant employment for all the patients with fractures of the lower extremities, sometimes to the number of five or six at a time. There are also other conveniences for the patients, on which we shall not enlarge.

The medical ward, which occupies the second story, is so similar to the last, that it does not require a separate description.

The venereal ward, or lock hospital, as such establishments are sometimes called, is not numerously filled. No



women are admitted without a certificate of marriage, on which account their apartment is generally vacant. The upper rooms of this very neat building are occupied by the patients of colour.

Besides the reception of paupers, the importance of keeping open such a place for the accommodation of persons afflicted with various medical and surgical complaints, and able to pay for their expenses, is sufficiently obvious. Accordingly, great numbers of very respectable and genteel persons have been found among those who have taken advantage of its conveniences.

This last has been most frequently the case in the lunatic department, from the peculiar difficulty and distressing circumstances attending attempts to confine such patients in their families. The few large rooms which can be thus appropriated, have long been occupied by persons whose wealth authorizes their relations to incur the additional cost of hiring them, some of whom have private servants at their own expense. These arrangements are justified by the reflection, that a large proportion of the revenue which sustains the Hospital, arises from the recompense made by a part of its patients.

A great object of all such establishments, the instruction of students of medicine, and the opening means for the improvement of the science, has been afforded by the Pennsylvania Hospital in a remarkable degree. It cannot, indeed, be doubted, that it has contributed greatly to the advancement and present eminence of the Philadelphia medical school. One hundred and fifty or more students, annually, have for many years received advantages from it, a season's attendance on this, or the lately enlarged infirmary at the Alms-house, being required of every candidate for a medical degree, and clinical lectures on medicine and surgery being delivered there throughout the year. Of these, the most regular series are given by Drs. Otto and Parrish. The number of students is at present much diminished, owing to the arrangement made by the University with the Alms-house. It admits of no doubt, that medical science



has been, in many instances, greatly advanced by the trials and observations made in this institution, by the illustrious men who have belonged to it.

The library contains about seven thousand volumes. It possesses a large collection of the rarer and more valuable medical treatises and bodies of plates, including most of the more ancient, and a very copious supply of the modern. Besides these, there are a large number of works on natural history; some of which are extremely splendid—such as “*Les Liliacées*,” and “*Le Jardin de la Malmaison*,” by Redouté, and Vieillot’s *Birds of Paradise*, forming, in all, nine large folio volumes of engravings, and exhibiting a rich specimen of the rare art of colouring on the plates. We may name, in addition, “*Thornton’s Illustrations of Linnæus*.” There are, also, a large number which, though inferior in magnificence to those just enumerated, are extremely valuable as references to the naturalist, and difficult or impossible to obtain elsewhere.

The anatomical museum was an object of much public importance, before the opportunities now afforded by the University for the prosecution of this study had reached their present extent. It was commenced by a gift from Dr. Fothergill, of London, being a set of beautiful paintings and of plaster casts, illustrating copiously the subject of midwifery—to which was soon after added the collection of Dr. Abraham Chovet. The first lectures upon medical subjects ever delivered in Philadelphia, were held in this collection by the late Dr. Shippen. The museum has, however, for many years, been an object of less importance, as students of medicine have now such copious means of anatomical instruction at the University, and in the private rooms of this city; and the managers conceived that it would be more useful to science, by being placed in a situation where it would be more frequently consulted. They therefore, by a formal vote, in the spring of 1824, conveyed it to the University of Pennsylvania—and most of the articles of which it consisted may now be seen in the Wistar collection, which has lately grown so rapidly under the care of Dr. Horner.

The corporate style of the institution is, "the Contributors to the Pennsylvania Hospital." These consist of such persons as have contributed a sum not less than twenty-six dollars and sixty-seven cents to its funds. Many among them have subscribed much larger amounts. They elect annually twelve managers and a treasurer—and the managers, soon after, elect six physicians, of whom three act as surgeons, and two attendants on the lying-in department. All serve without reward, except such as patients in easy circumstances agree to give the physician. Two managers, a physician, and a surgeon, attend regularly on the fourth and seventh days of every week, (Wednesdays and Saturdays,) and the medical men oftener, if necessary. The managers serve each two months, and two at a time—the physician and surgeon, four—and the physicians to the lying-in department, when necessary, throughout the year.

Admissions are by a certificate from a physician or surgeon, a note of security for the necessary expenses of clothing, &c. and, except in the case of the United States, by an order from a manager. Recent accidents, strangulated hernias, &c. are admitted at all moments.

Much care of the sick, and particularly of the surgical patients, is of necessity left to the house-physician and surgeon, which are two very responsible offices. The arrangement of these duties has been, within the last two years, very materially changed. Formerly it was based upon the old system of medical apprenticeship. Three pupils were taken, each for five years—and, as the intervals for which they entered the house were never uniform, their term of residence was divided by their succession into very unequal and irregular portions. During the first of these, the pupil was employed as apothecary and conservator of the museum—in the second, as dresser, bleeder, and librarian—and in the third and last, as house-physician, surgeon, and accoucheur. It will be at once perceived, that, embracing, as it did, the whole period of preparation for the degree of Doctor of Medicine, such a plan was open to very material disadvantages. The beginner was

rarely qualified for the duties thus thrown upon him—and all duties were liable to clash, in the most inconvenient manner, with the attendance of lectures and examining classes, preparatory to graduation. These inconveniences were supposed to be palliated by mutual assistance, and by instruction given to the young apothecary by his predecessor. At present, however, a regular apothecary, who has become acquainted with his responsible profession by the usual methods, and by several years' education, is entertained at a salary, and to him the library is also given in charge. Two individuals, who must be graduates in medicine, are chosen, to continue a year in the house. One of these acts as house-physician, and the other as house-surgeon; an arrangement being made by which they mutually exchange these duties, in order to gain the experience of both, by practising for a considerable period under the eye of the physicians in attendance. The comparison of the modes of practice of different individuals, and their relative success in different diseases, engenders a singular confidence among the Hospital pupils. No regular system of preparatory "walking the hospital," further than that required for graduation, is demanded of these gentlemen—but a preference is given in the selection to those who, other circumstances being equal, have been most assiduous in attending the practice of the house. The house-physician and surgeon are expected to perform the bleeding, cupping, dressing, &c. belonging to their departments. Leeches, a very troublesome charge, when thirty, sixty, or one hundred small animals are to be employed at a time, are applied by a person who makes it his profession. Under this arrangement, the present system is greatly superior to its predecessor; both as it regards the interests of the institution, and as it enables a larger number of medical men to receive advantage from it in their education.

The hired persons employed in the house amount to forty-six—of whom six are retained by the friends of wealthy patients, for attendance on them, individually, and forty belong to the Hospital, generally. Nineteen of these



are employed in the immediate care of the patients, being about one to every ten.

The funds of the establishment are difficult to estimate, from the irregularity of their resources and expenditure. The capital stock cannot be, at present, precisely calculated. It is about 150,000 dollars—the interest of which, under existing circumstances, falls short of 9000 dollars. West's picture has yielded, from 10th month, 13th, 1817, to 4th month, 22d, 1824, expenses not deducted, 14,751 dollars 50 cents, from nearly fifty-nine thousand visits. The receipts from this source have, as we have already observed, greatly diminished; those for the last year being only 677 dollars. It is believed that nearly all our citizens who frequent exhibitions of this class have already seen it—but strangers continue to visit it.

The amount of the repayments for board, clothing, articles destroyed, and other expenses of pay patients, were, in the year terminating in the spring of 1823, 19,575 dollars 41 cents—and for the next year 22,220 dollars 78 cents. With these means, from one hundred and sixty to two hundred at one time in the house, were supported during the year, including ninety poor. The lowest rate of board, and that at which the seamen entered by the United States, and patients from charitable associations and the guardians of the poor are received, is two dollars and eighty cents per week. On this, advances are made with other patients, according to their pecuniary means.

The managers have always had it in view to make the comforts of the institution equal or superior to those of a plain but respectable boarding-house. None but superfine flour is employed for bread—and free expenditures are made, when necessary, to obtain provisions of a good quality.

The whole expenses of the establishment in the year ending 5th month, (May,) 5th, 1823, were 27,030 dollars 42 cents—besides articles raised on the land belonging to the Hospital, such as milk, butter, pork, hay, &c. estimated at 2936 dollars 67 cents. In the year ending 5th month,



(May,) 3d, 1824, these sums were 27,494 dollars 28 cents, and 2846 dollars 52 cents.

The following list of physicians and surgeons to the institution, from its commencement, contains a series of names highly interesting to our profession and to all those who inquire into the local history of Philadelphia.

Lloyd Zachary, Thomas Bond, Phineas Bond, Thomas Græme, Thomas Cadwallader, Samuel Preston Moore, John Redman, William Shippen, Cadwallader Evans, John Morgan, Charles Moore, Adam Kuhn, William Shippen, jun. Thomas Parke, James Hutchinson, Gerardus Clarkson, John Jones, Benjamin Rush, John Foulk, Caspar Wistar, Philip Syng Physick, Benjamin S. Barton, John R. Coxe, Thomas C. James, John S. Dorsey, Joseph Harts-horne, John C. Otto, Joseph Parrish, Thomas T. Hewson, Samuel Colhoun, William Price, John Moore, John Wilson Moore, Samuel Emlen, John Rhea Barton.

The present officers are—

*Managers.*—Samuel Coates, Thomas Stewardson, Thomas P. Cope, Joseph Watson, Israel Cope, Thomas Morris, Alexander Elmslie, Matthew L. Bevan, Joseph Johnson, Roberts Vaux, Charles Roberts, William W. Fisher.

*Treasurer.*—Joseph S. Lewis.

*Secretary.*—Thomas P. Cope.

*Physicians.*—John C. Otto, M. D. John Wilson Moore, M. D. Samuel Emlen, M. D.

*Surgeons.*—Joseph Parrish, M. D. Thomas T. Hewson, M. D. John Rhea Barton, M. D.

*Physicians to the Lying-in Department.*—Thomas C. James, M. D. John Moore, M. D.

*Steward and General Superintendant.*—Samuel Mason.

*Resident Physicians and Surgeons, alternately.*—Caspar Wistar, M. D. Samuel L. Howell, M. D. pro tem.

*Medical Assistant.*—Caspar W. Morris.

*Apothecary and Librarian.*—Samuel C. Shepherd.

*Matron of the Insane Department.*—Alice Harland.

ART. III. *New Division of Apoplexies.* By M. A. SERRES, Chevalier of the Legion of Honour, one of the Physicians of the Hospital of la Pitié, Chief Director of the Hospitals, &c.—Translated from the original by *George B. Taylor*, Student of Medicine.—(Continued from No. 16.)

“Antequam de remediis statuatur, primum constare oportet, quis morbus et qua morbi causa, alioqui mutilis opera, inutile omne consilium.”

BAILLOU, lib. i. Cons. XIV.

SECTION VIII.

*Meningeal Apoplexies, with Arterial or Venous Ruptures.*

TWENTY-THIRD OBSERVATION.

D. D. sixty-six years old, had been subject to hemorrhages in his youth, and headachs when adult—much devoted to women and wine—got drunk about thrice a week since his fortieth year. After his drunkenness was accustomed to vertigoes that often forced him to relinquish his work.

On the 28th of August he began drinking with his comrades—got drunk, and passed the night in the street. On the 30th, being recovered, he returned to the tavern, where he was found by his wife, stretched out on the floor. She, thinking him drunk, had him taken home, where he remained till next morning without any medical aid.

On the 31st he was brought to the Hotel Dieu, in the following condition. His face red, and slightly tumened—heat more vivid in the face than elsewhere—pulse strong, hard, full, frequent—respiration very slow—inspiration short—expiration sudden—coma profound, not disturbed by any excitation—occasional movements of the limbs—mouth partly open, not distorted—tongue not extended.

At three o'clock one of my pupils came to inform me that the state of the pulse had suddenly changed, and the patient was dying. When I arrived, I found him cold, pulse small, weak, much less frequent, and softer—the respiration

more oppressed : some minutes after, the pulse became more frequent, and he died about four o'clock.

*Dissection twenty-three hours after death.*—Face violet coloured, as if bruised—veins of the neck tumefied and engorged—venous trunks injected. When the skull was opened, and the dura mater cut, a small quantity of blood poured out, and the pia mater appeared much injected and somewhat red : on separating the middle lobes, black coagulated blood was seen at the base of the brain. \* I cut the pons varolii at its junction with the corpora olivaria and pyramidalia, turned the brain over, and detached, with the handle of the bistoury, the blood, which formed a thick layer, and covered a rupture of the internal carotid artery, at the point where it lies between the anterior and middle lobes, and divides into the anterior and posterior branches. This laceration was unequal—the external coat jutted outwards, and the middle was retracted. I detached the trunk, and could not perceive in its length any granulation or cartilaginous plate—the arteries were only more dilated than is usual, and the fibrous tunic thinner in proportion.

The blood poured out by this orifice, had formed a sort of cake, which gave impressions of all the projections and hollows of the surface of the basis. Part of it had entered the ventricles with the pia mater, and some had also passed down the vertebral canal for three inches. The brain was injected, but uninjured—the blood freely followed the slightest incision. The left ventricle was much thickened.

#### TWENTY-FOURTH OBSERVATION.

A huckster, of the market, was brought in a dying state to the Hotel Dieu, and died two hours afterwards. The poor wretch had laid a wager to drink seven measures of wine, without eating any thing : when she went to her seat, she fell off her chair, where she lay unable to move. Five hours after they brought her to the hospital.

On opening the head, I found the basilar artery torn at the junction of the two vertebrals—one of the last was freely detached, the other was still held by a ragged flap.



The blood had filled the base of the skull, and formed a thin plate, moulded on the inequalities. It had not penetrated the ventricles, one of which contained about two ounces of serosity.

TWENTY-FIFTH OBSERVATION, (from Morgagni.)

A servant about twenty-two years old, of good mind, and very laborious, ran after the carriage of his master, which was drawn by four horses: it was in the midst of winter, and snow was then falling. Covered with perspiration, he went to work in the evening without changing his clothes. In the morning, as he was rising from bed, he fell down three times—when lifted up, he complained of a deep pain in the head, especially towards the occipital region. Fever soon followed, with pain and lassitude of the whole body. The day after his bowels were moved by pills. On the third day he was bled, but in vain—as the disease increased, and the patient became lethargic. On the fifth day he was cupped on the back of the neck. On the eighth, he lost his speech and was motionless for an hour, like an apoplectic; after this the pain of the head was exasperated, and the whole spine was violently straightened. On the ninth day he was bled from the other arm. The symptoms were palliated until the return of the apoplectic condition, when he died. Every thing was found right in the belly and chest—but the head was the seat of the disease. At the point where the spinal marrow goes out of the skull there was *grumous* and *clotted blood*, which had escaped by a laceration in the trunk of the internal carotid.

Morgagni also reports, first, another observation of meningeal apoplexy with rupture of the vessels of the dura mater—secondly, with erosion of those of the pia mater, and, thirdly, with dilatation of the arteries of the dura mater.

THIRTIETH OBSERVATION.

The following observation of Bang may be equally referred to this variety.



“A man, thirty years old, struck with apoplexy, loss of speech, convulsions, hiccough, and involuntary micturition, died after the second paroxysm. On dissection, much black blood was found effused beneath the cranium from ruptured vessels of the dura mater. The cerebrum et cerebellum were sound.”

I have observed such ruptures in men who had fallen on their heads, or had been struck on some part of the skull. Most frequently the ruptures are found in the arteries of the base of the skull. Twice, the rupture has been on the lobes, and then the extravasation has been less abundant.

In upwards of four or five hundred bodies opened, I found seven or eight times, small clots of blood, corresponding to the capillary orifices in the arteries, and in every case the arterial and venous systems of the brain were more dilated—the calibre of the arteries and veins much greater than common in dead bodies. I have also remarked, that the left ventricle of the heart was stronger, and its walls thicker, although its internal capacity was not augmented.

#### SECTION IX.

#### *Meningeal Apoplexy, with Aneurismal Dilatation and Arterial Rupture.*

##### THIRTY-FIRST OBSERVATION.

G. B. E. aged fifty-nine, by trade a coppersmith, of a very robust constitution—short and very muscular neck—was for a long time subject to a weight in the head, or according to his own statement, with an inexpressible stupidity. This condition was much increased when he exerted himself, walked swiftly, or had drunk. On this occasion we should mention, that the cause of this sensation was a habit of drunkenness, and an abuse of brandy in particular.

On the fourth of February, he suffered an attack of acute pneumony, for which he was admitted at the Hospital of Pity. On the sixth of the same month, this disease terminated favourably after two bleedings and leechings over the seat of pain, &c. He was fairly convalescent, and prepar-

ing to quit the house, when, on the 26th, he heard of the death of a much beloved child. The suddenness of this news gave him a violent shock, under which he fainted and remained insensible for some hours—in the evening fever declared itself. In the morning, when I visited him, I found him in the following condition.

Face animated—jugulars engorged—respiration high, slightly painful at the seat of the former pain of the side—pulse full, strong and frequent—continual dizziness when he was standing upright, or sitting up. The last symptom did not strongly command my attention, because it had accompanied the acute stage of the pneumonic disease. A copious bleeding gave relief. In the evening he was drowsy.

On the 28th, permanent apoplexy came on—respiration rare—pulse frequent, strong, and very hard—artery vibrating—coma—unconscious though very feeble movements, when strongly excited—redness and tumefaction of the face—sudden death at one o'clock, P. M. without gradual diminution of the symptoms. One of my pupils was present.

*Dissection twenty-seven hours after death.*—Before opening the body, I asked the following question before the pupils present. What was the cause of death in this case? I established the data which induced me to reject the idea that it might have been produced by a renewal of the pneumonia, and still less to consecutive hydrothorax. Analyzing, on the contrary, the symptoms that had manifested themselves after the death of the infant, it was my opinion that the disease was meningeal apoplexy; and added, that the rapidity of its progress, and the suddenness of its termination, the quick change from marked reaction to death, induced me to expect an arterial rupture within the skull. We shall see that I was not mistaken, except in relation to the pre-existence of an internal aneurism, unprecedented, as far as my knowledge extends, in the annals of science.

As soon as the skull was opened, we perceived at the base of the brain, an enormous quantity of black blood, co-

agulated in lamellar clots. As the patient suffered no paralysis, we may presume, after what has been heretofore stated, that the blood flowed from a ruptured artery or vein. We cut the spinal marrow, and turned the brain over. We then perceived the basilar artery was aneurismal above the pons varolii, and towards the confluence of the arteries it sends off. The aneurismal dilatation measured an inch in diameter in every direction, and when the same was blown up, it was the size of a small hen's egg: its form was rounded, and somewhat flattened on its superior surface. At the point corresponding to the base of the brain, it was entirely empty, and exhibited on its external and lateral portion, a circular opening with irregular borders, which was about a line and a half in diameter—its walls were thin but uniform. The middle tunic was in that cartilaginous state so often found in the arteries of the base of the brain.

The quantity of blood poured out by this opening, was about a pound in weight. It had followed the lamina of the membranes, and had with them entered and distended the ventricles—otherwise the cerebrum and cerebellum were sound.

At what epoch should the existence of this aneurism be dated? By what signs should we have suspected its existence? Might the weight of the head—pain—increase of both on exertion or excitement, be regarded as diagnostic symptoms? We can say nothing positive on the subject, but must wait for more facts.

Do the considerable dilatations of the meningeal vessels, observed by Morgagni, bear relation to this case? The facts which this illustrious observer relates, are too slightly detailed to allow us to regard them as analogical. I will only except one, where he expresses himself in a more positive manner in carefully remarking the aneurismal dilatation of the carotid and basilar arteries, unaccompanied by rupture. We also find in Sandifort an observation of Vieussens, in which the carotid artery was aneurismal in the cavernous sinus, and not ruptured. I have made some similar observations.



*Membranous Apoplexy, with Arterial Rupture in the Choroid Plexus.*

Membranous apoplexy, with arterial rupture in the plexus choroides, has been more carefully observed, better described, and its etiology has not escaped attention. "I have explained," says De Haen, "in what manner the vessels of the choroid plexus may be injured and torn, and how the blood they contain may be diffused in the lateral ventricles." This remark follows a very interesting observation.

## THIRTY-SECOND OBSERVATION.

"An old man, very much addicted to wine, filled himself so thoroughly with it, that he was struck with apoplexy while drunk, and died two days after. The dura mater was sound—the vessels of the pia mater were so much dilated that they appeared aneurismal and varicose, not only on the surface, but in all the cerebral depressions, at the circumference and base of the hemispheres. The left ventricle contained an abundance of grumous blood, coming from a rupture in the choroid plexus—the right contained a small quantity of fluid. The pia mater of the cerebellum, principally on the left side, was in the same condition as that of the cerebrum."

*Meningeal Apoplexy—Arterial Rupture.*

## THIRTY-THIRD OBSERVATION.

Fernel relates the case of a robust man, who, in consequence of a violent blow on the left eye, became suddenly apoplectic, senseless and motionless, with difficult and stertorous respiration, and other signs of severe apoplexy. Bleeding, and other measures, produced no benefit—he died in twelve hours. On opening the head, the bones and substance of the brain were found uninjured, but at the basis there were two or three ounces of coagulated blood, escaped from the rupture of an artery in the retiform plexus; the ventricles of the brain were uninjured.

## THIRTY-FOURTH OBSERVATION.

A man received, in a scuffle, a blow between the eyes—became apoplectic, and died two hours after, to the great astonishment of the spectators, and without offering any change of colour or alteration of countenance. The retiform arteries, (that admirable net-work at the base of the brain,) were ruptured, and a large clot of blood, weighing three ounces, was found.\*

Tulpius has observed the same consequences produced by the same cause.

## THIRTY-FIFTH OBSERVATION.

A woman aged seventy, thin, accustomed from infancy to rustic life, was in the habit of being frequently bled, according to the fashion of the country. On the 13th of June, 1655, the sixth day of the full moon, having gone from home to gather wood, her relatives were much surprized to find that she did not return at night. In the morning she was found dead, with a very slight wound on the left temple. The dissection was made in the presence of a magistrate. The wound did not penetrate to the bone, making it evident that death was produced by some internal cause. Having opened the cranium, I turned the brain over to the right side, and found an enormous collection of blood between the pia mater and the brain. It passed forward to the junction of the optic nerves—behind, it filled the vertebral canal down to the sacrum, and also surrounded both hemispheres. This blood came from the little roots of arterial filaments arising from the carotids and vertebrals, and surrounding the base of the brain.†

## SECTION X.

*Meningeal Apoplexy, with Venous Rupture.*

## THIRTY-SIXTH OBSERVATION.

A man, forty six years old, had a very warm dispute

\* *Henricus ab Heers*, obs. x.

† *Bonetus Sep. Anat. lib. 1, section ii. page 83.*

with another on the 17th of May, 1818, which was followed by a dull pain of the head, and a state of excitability that continued during the whole day. He drank freely in the evening, to *drown sorrow*, as he said.

In the night he snored considerably, and his breathing made much noise. His wife was frightened, rose and lit a candle, and discovered that he was insensible and speechless. When stirred, he moved his limbs, but it was in vain to attempt inducing him to swallow, his teeth were firmly locked.

On the 18th he was placed under my care in the Hospital of Pity, where he exhibited the following appearances. His face was pale clay colour—lower lip hanging—mouth somewhat open—not distorted—no movement of deglutition when liquids were administered—respiration very slow—inspiration loud—expiration short—pulse frequent, small, unequal—stupor—involuntary movements when strongly irritated—involuntary micturition. Death in the night of the 18th—19th.

*Dissection.*—Face pale—lips violet—veins of the neck swollen. When the head was opened, about an ounce of sanguinolent serosity flowed from between the dura mater and arachnoides—this membrane was reddish, adhering especially to the external coats of the veins which run on the pia mater—sinuses distended by a black and fibrous blood. The vessels of the pia mater were very much engorged—this membrane had a reddish aspect—had contracted towards the longitudinal sinus an adherence with the dura mater and arachnoides, that could not be broken up without tearing the membrane.

The arachnoides of the lateral ventricles was red, and granulated at the middle and posterior part. A sero-sanguinolent fluid was contained in the left ventricle. The plexus choroides of the same side was thickened—the vessels dilated—the colour, pale red, without cyst or granulation in its thickness. The choroid plexus of the right side contained black blood, thick and coagulated, lying between two layers of the pia mater, the external of which



separated it from the walls of the ventricle. This clot began at the middle of the ventricle, and passed forwards and downwards, following the cavity, and below the posterior part of the fornix. Arrived at the lower part, at the bottom of the ventricles, it passed forwards and downwards, always contained in the thickness of the pia mater, and always separated from the ventricular walls. Above the sanguineous layer floated two serous cysts of the size of a bean, and some miliary ones were scattered here and there in its thickness.

Whence came this blood? Evidently from an arterial or venous rupture. I cut the external layer of the pia mater, and threw water on the clot to detach it without disturbing the texture of the choroid plexus. This done, I perceived a torn venous branch, equal in size to the sheath of a pigeon's feather: the extremities were separated from each other without being widely parted. The blood seems to have escaped drop by drop, and to have been arrested by the compression exercised by the clot on the coats of the vein when it had filled the ventricle. The choroid plexus of the same side was very red—the brain was very much injected—the lungs gorged with blood, as well as the right ventricle and auricle, the vena cava superior, and its branches.

I have found a rupture of the great vein of the choroid plexus in an apoplectic—twice or thrice an extravasation on one of the lobes, from a rupture of the veins of the pia mater—the effusion very circumscribed and in clots. In a single instance, I found an effusion produced by a rupture at the confluence of the sinuses. More frequently I have found small cysts in the plexus as large as hazel nuts, filled by a small clot. Always, since I have acquired experience on this subject, a careful dissection has enabled me to find the capillary vessel through whose rupture the hemorrhage was produced. We ought to remark, what we ought not to forget, that these cases are principally met with in patients who have suffered falls, or blows on the head.

In presenting the new divisions proposed in this memoir, I have reason to fear that the facts which serve for their

foundation have escaped other observers. Meningeal apoplexies, with arterial or venous ruptures, it seems to me, should be more frequent—otherwise, persons who make examinations are content with ascertaining the volume of the blood, without reference to the source whence it came. The numerous researches I have made on this subject, in original works, have convinced me that I have apoplexies as they have been presented to all observers.

I should be carried too far if I detailed all the facts met with, I shall point out some, and refer those who are curious to compare the results obtained by me, to the works in which the observations are contained.\*

#### SECTION XI.

##### *Cerebral Apoplexies and their Varieties.*

We propose to solve the following problem: *An apoplexy being given, to determine its seat by the symptoms.* We have already seen meningeal apoplexies, or those without paralysis—we now are to consider cerebral apoplexies, or those accompanied by palsy.

(a) *Attack.*—The attack of cerebral apoplexies is often sudden and instantaneous, especially in sanguine men with short necks and more than ordinary corpulence, and in those who, in addition to some of these predispositions, are devoted excessively to drinking or venery. An observation which I believe has not heretofore been made, is that some moments before the attack the brain is extraordinarily excited, and a facility of thinking, and frequently a hardihood of expression occur, which are not common to the individual.

Sometimes a numbness of one side of the body, of one side of the face, or a fixed pain in the head, precedes the attack. Most frequently we remark a long time before the fit, an embarrassment of the tongue—a difficulty of pro-

\* See Bonet. *Sepul. Anatom.* lib. i. sect. ii. page 83, vol. 1. Drelincourt lib. i. sect. ii. obs. 13. Pechlin, No. 15. Leydel, idem. Bonet. *Sep.* lib. xi. sect. ii. obs. 15. Bartholin, *An.* xi. hist. 6. Drelincourt, obs. 261, idem. Wepfer, p. 469. Fernel, lib. xi. chap. 15.

nouncing certain letters, or articulating certain words—perhaps not more than once in fifty times is there full stuttering present. These last symptoms, as well as the much more rare one of loss of memory for names and things, are almost always observed in men devoted to profound meditation, or to violent and prolonged sorrow. A sudden contradiction, a violent passion opposed, or a movement of anger, causes a full development of the disease, which has been long approaching through the fatigue and excitation of the brain.

(b) Apoplexy, however, is not the inevitable termination of these precursory symptoms—in this *incubation* of cerebral apoplexies, (if I may so speak,) we may still avoid them by diet, by exercise carried to fatigue, by the proper administration of revulsives, or by slight evacuations of blood from as near the hemorrhoidal vessels as possible in both sexes.

(c) These evacuations are particularly necessary in persons accustomed to determinations of blood to the head, which most frequently produces a roaring of the carotid arteries that is very fatiguing in bed: at other times, such patients see flashes of light in the dark, or a sudden sound as if a pistol were fired off near them. Wo to those who neglect such warnings!

(d) Whether these symptoms have preceded, or the patient has not felt any stroke, the face, at the moment of attack, is coloured in an unusual manner—the cervical and facial veins swell, especially in the tumult of the passions or of anger—the tongue first becomes embarrassed—the sight is troubled—the hearing impaired. The patient loses his sensibility and faculties of mind—falls if he be erect, and on that side which afterwards will be struck with apoplexy—this circumstance is of much importance to the physician, when he is called to render his earliest assistance.

(e) Some hours after the attack, if the brain has not already been destroyed at some part of its surface, respiration becomes slower, the venous blood suffers a mechanical obstruction, requiring an appropriate reaction of the breast. The pulse is strong, hard, and frequent—the artery vibrates



under the finger, and the action of the heart increases in proportion to the difficulty of respiration. There is here a contrast between the functions of the lungs and heart, which has not, to my knowledge, been previously remarked, and appears to me to merit all the attention of practitioners. The force and hardness of the pulse is continued until the moment of the rupture in the brain, it then becomes suddenly small, concentrated, and frequent.

(*f*) Respiration is equal on both sides in the first hours, and sometimes during the first days of the attack—but the thorax and lungs are unequally dilated—one side of the chest becomes motionless, while the other appears to redouble its activity: on the side that lessens its action, the ribs are flattened, and on the opposite side they are elevated; the two sides of the chest offer thus a contrast very readily perceived by the observer.

(*g*) This takes place previous to the occurrence of the hemiplegia—and it is so much the more important to attend to this symptom, as we may prognosticate which side is about to be paralyzed, and sometimes we may prevent this unfavourable complication by acting with a promptitude equal to that of the progress of the disease. I have often made this prognostic during my visits, and the result has confirmed it—I made it especially on a patient I was called to see with Drs. Montaigu, Petit, and Caillard, physicians of l'Hôtel Dieu. Seven hours after the attack, and the fourth from our consultation, the event was realized.

(*h*) The coma and stupor are both carried to a high degree—the sensibility is often obtuse on both sides equally; sometimes in a more remarkable degree on the side that is about to be paralyzed: at other times the sensibility is preserved, although the paralysis is on the point of appearing.

(*i*) In short, one side or the other becomes motionless. I have passed days, and often whole nights, in observing what I have described. I have seen the distortion of the mouth preceded many hours by convulsive movements limited to the side that soon after became immoveable—also, the same movements of the superior and inferior extremity. At

other times one whole side has been rigid, as if tetanic, or from a permanent contraction of the muscles, which acquired a very great hardness. The muscles of the lips often begin to be paralyzed—again, it is the limbs—nothing constant has been observed in this particular. It is not, however, the same with the limbs: I have almost always observed that the leg ceased to move before the arm—frequently the leg remained motionless under irritants, while the arm was still excited to convulsive movements, and sometimes to a vermicular oscillation of the muscles, without marked locomotion. A singular peculiarity is, that sometimes the paralyzed member preserved its sensibility, and at others, and almost always, the loss of sensibility preceded and accompanied that of mobility. I think that the seat of organic lesions may produce this modification of sensibility.

(k) I do not remark here the paralysis of the stomach, which is rendered insensible, in some degree, to the most powerful emetics, nor of the intestinal canal—I shall have occasion to refer to them when treating of the mode of cure.

(l) *Varieties of Cerebral Apoplexy.*—We have seen that the varieties of meningeal apoplexy were very important relative to the diversity of organic alterations—but we have avowed, at the same time, that observation had not yet enabled us to know the symptoms of each variety, and we are content to point out the simple shades of intensity in these phenomena. Shall we be more successful in cerebral apoplexies? and on what bases shall we establish the divisions? They are naturally placed in the diversity of paralyzes with which apoplexies may be complicated—the following are those I have principally observed:

1st, Cerebral apoplexy with hemiplegia.

2d, With paralysis of one arm.

3d, With paralysis of the leg.

4th, With double hemiplegia.

5th, With complete paralysis from a single attack.

I do not hesitate to say, that these apoplexies have dis-

tingent and different seats in the brain, as will be seen by the following analysis of my dissections.

*Cerebral Apoplexies.*

*Dissections.*—I have opened and attentively dissected one hundred and seventy-one subjects, dead of cerebral apoplexy, with hemiplegia of the arm and leg at the same time, and I have found, in one hundred and seventy-one, the hemisphere of the brain on the opposite side materially altered in its structure. I have dissected the brain of forty-seven hemiplegics dead at the Hospital of Pitié, and forty-seven times I found disorganization opposite to the palsied side. I have received, from the hospitals of the Bicêtre and Salpêtrière and the Hotel Dieu, about one hundred and fifty brains of hemiplegic patients, and always, without exception, the alteration of the brain was in the opposite lobe to the side paralyzed. May we not, after these facts, and by the aid of two or three thousand cases contained in the annals of science, establish it as a principle, that the cerebral disorganization constantly occupies the lobe *opposite to the palsied side, or the side that has remained hemiplegic, during the cerebral apoplexy.*

I am well aware that some facts may be stated in opposition;\* but if we wish to be rigid in medical logic, we shall find there is need of new and authentic observations, before we can admit them. For myself, I give my opinion frankly; they appear to me entirely erroneous, not excepting those collected by the celebrated Baglivi. I cannot believe that a medical observer of the present day would say, “I have seen the patient hemiplegic on the left side, and I have found the seat of disorganization of the brain in the left lobe, or in the right, if the paralysis has affected that side.”

Thus far we may prognosticate, that in cerebral apoplexy with hemiplegy, it is in the opposite lobe that the seat of

\* Vide Baglivi; Obs. de Malpighi; Morgagni Epist. lxii. art. xii. M. Portal, p. 233, 564.



the disease will be found, and it is to this side we ought principally to direct the curative measures.

(n) I pass to apoplexies with double hemiplegia. They may come on suddenly, or by two distant attacks—both instances I have seen. The seat is the same as in that of the single apoplexy, with paralysis of one side. The two lobes are successively affected, and by recent collections, if the double hemiplegia was instantaneously produced, at some hours, or only after an interval of some days. If, on the contrary, as is most common, a new attack strikes a hemiplegic patient, and paralyzes the uninjured side, there is then two extravasations, one old and the other recent, whose characters are too well marked to allow us to confound them.

(o) A single attack of apoplexy may paralyze the whole body—and in this case both arms and legs remain motionless, under the most acute irritations: the mouth is not distorted; a pathognomonic sign with the preceding cases of this variety. On dissection, the extravasation will neither be in the medullary part of the lobes, nor in the striated bodies, nor in the optic couches—it is formed in the thickness of the pons varolii or tuber annulare, sometimes deeply seated, without having ruptured its walls, at others these are ruptured, and the blood is diffused at the bases of the cranium; death always follows with a frightful quickness—the patients die in a state of asphyxia, or like those animals who have had both pneumo-gastric nerves cut. I have only once met with a secondary and slight collection in the interior of the corpora olivaria and pyramidalia. The patient had not survived more than seven hours.

Such are the principal varieties of cerebral apoplexies—if I am not mistaken, or have not misinterpreted the numerous facts observed, we may prognosticate the seat of the disease from these symptoms. To be able to point out the injured portion of the brain from the condition of the paralyzed parts, is one of the most interesting circumstances to the physician and physiologist.

*(To be continued.)*

ART. IV. *On Baths and Mineral Waters.* By JOHN BELL, M.D.

(Continued from No. 16.)

IN pursuance of the plan laid down in the last number of this Journal, I commence this paper by an account of *Hot* and *Vapour Baths*, and *Douches* or *Spout Baths*.

By a *hot bath*, we are to understand that in which the water is of a heat exceeding 98 degrees of Fahrenheit, (29° R.) It is decidedly stimulating, and in its often violent and marked effects on the human body, contrasts strongly with the more pleasurable impressions produced by the warm bath; and must convince us of the impropriety of including the two under a common head, and of confounding their different powers. The hot bath, by imparting to the system an excessive dose of caloric, strongly excites the circulation, and proves a nervous irritant. As water, moreover, is much more dense than atmospheric air, (see p. 331, of Journal,) the impression on the body immersed in it must be so much the more lively. In fact, we see that, in such a bath, the skin becomes red, the pulse is accelerated, the vessels are turgid, and respiration is more frequent; a copious sweat soon bathes the face; the arteries of the neck beat with more frequency; the mind becomes obtuse and inattentive; and even vertigo and apoplexy supervene. If the bath be prolonged to excess, so great will be the quantity of perspirable matter secreted, that Le Mounier, in a bath of 111 to 113 degrees F., (35 to 36° R.) lost, in the short space of eight minutes, a pound and a half of his weight; after which, he was obliged to abandon the bath on account of the violent symptoms which he experienced, especially about the head. (*Mem. de l'Acad. des Sciences*, 1747.) Whether this loss was by cutaneous or pulmonary exhalation, or by both, it is not necessary to inquire: the practical deduction is the same. Even simple

pediluvia, at a high degree of heat, sometimes produce the above effects to a considerable extent.

But we cannot better establish general principles on the effects and uses of hot baths, than by borrowing the language of the celebrated Zimmerman, who, in his valued work "*On Experience in Medicine*," thus expresses himself: "Hippocrates laid down a rule, the neglect of which has been the source of many diseases. He says, that a bath enfeebles every time that its heat exceeds that of the body immersed in it. Now, as my house is not more than a league distant from the baths of Hasburg or of Schinznacher, I have had every possible opportunity of verifying the Hippocratic precept. The very hot bath of Schinznacher, is pernicious to weak and delicate persons, notwithstanding that it strengthens in general those who, in using, follow the above rule. Hence, it happens, that I have often observed spasms of the stomach, and tumefactions, the consequence of them, cured by these means, as also edema of the inferior extremities. Those with the gout, have, from an inability to support themselves on their feet, recovered their strength so as to walk with freedom; and, at the baths of Hasburg, I have seen military officers, who, although healed of their wounds, continued weak in those parts, throw away their crutches, and in a short time depart entirely recovered. Hence, also, it often happens, that fluor albus is removed in some females and exasperated in others. These waters have also been found hurtful to rickety children, when used too hot, though they work prodigies when we keep in view what Hippocrates advises." A great number of observations made by Marcard, and confirmed by Franceschi, are in accordance with the precept of the great Father of Medicine, because entirely founded on the most accurate investigations. We learn this much from the passage just quoted, that a bath excessively hot is intolerable to delicate subjects, being a stimulus disproportioned to their exquisite sensibility; and also that it is hurtful in sthenic subjects from the addition of the stimulus of caloric to the action of those powers which induced and main-



tain the excitement of the system at too exalted a grade. But in the effects of hot bathing in all these cases, I see nothing contradictory to the arrangement and principles already advanced.

The few circumstances under which hot baths can be of any utility, demand, at least, a certain degree of inertia on the part of the subject on whom they are tried, which may be either the accompaniment of a phlegmatic or lymphatic temperament, or the consequence of protracted disease, without which they can by no means be tolerated. Fourcroy relates the case of an individual, who, being immersed in a bath of the immoderate heat of 66 degrees of Reaumur, (180° of Fahrenheit,) fell down apoplectic an hour after. And Buchan (*Remarks on the usage of the Warm Bath*,) acquaints us with the history of a patient who was seized with paralysis from having used a bath excessively hot. Peter Franks mentions the development of a synochus, followed by the appearance of fourteen abscesses, after the application of such a bath. Venel saw at Balaruc, a sick person sink into a state of fatal debility by remaining too long in a hot bath; and the same author tells us, that, at Cauterets, a Spaniard died of hemorrhage from the same cause. Similar inconveniences and alarming effects are also noticed by Currie, to whom we are indebted for so many useful observations on the different species of baths. We shall soon see, when speaking of vapour baths, with which the hot have some affinity, that there are particular affections in which, provided they exceed a little the animal heat, they may be productive of the happiest results.

*Vapour Baths.*—The *laconicum* of the ancients, and the natural dry sudatories, as those of Baiæ, so much praised by Celsus in the cure of dropsy, are erroneously confounded with vapour baths, artificially prepared, or established over boiling springs; since the former act simply in virtue of their caloric, dry heat, and excite briskly the system; whereas, the latter, tempered by the watery vapour, possess powers of a much milder nature, as we shall shortly have reason to observe.

Vapour baths are simple or compound : simple, when the vapour arises from pure water ; compound, when medicinal substances are added to the water. They are not, assuredly, an universal remedy, as Dr. Sanchez would fain persuade us, but their very extensive use, and the encomiums lavished on them by the writers of all ages, and more especially by the Italians, forbid a doubt as to their efficacy in some of the most obstinate diseases. Marcard published a very interesting dissertation in 1778, full of practical remarks, in which he not only describes a very simple mode of applying them, but also acquaints us with their success.

I shall only speak here of those vapour baths in which the head is exposed to the open air, a circumstance worthy of attention as preventing any impediment to respiration.

When the whole body, or only part of it, the head being free, is surrounded with vapour exceeding the animal temperature, a portion of the water thus elevated and suspended by the caloric is introduced into the system through the absorbent vessels, and the remainder, losing part of its caloric by contact with a body of a lower temperature, is condensed into drops which trickle down the skin. After a while, the heat is diffused over the entire surface, whence even the most remote parts become red and covered with a profuse sweat. And here it is worthy of remark, that the avidity of the absorbents in seizing the watery vapour is so great at the commencement that they take it all up ; nor does it flow on the body until the vessels themselves are entirely filled, as was remarked by the celebrated Mascagni and Franceschi, when the former made use of the vapour baths established by the latter at the Lucchese *thermæ*.

As these baths facilitate in a more particular manner perspiration, they are proclaimed to be excellent resolvents, though I apprehend this property is as much due to their promoting absorption as any other process. They are employed with the greatest success in glandular engorgement, in enlargement of the bones, and rigidity of the articulations ; nor did Marcard obtain less benefit from them in chronic rheumatism and gout. To this remedy is even at-

tributed the power of warding off anchylosis, so liable to happen when this latter disease fixes its seat in any of the joints.\* Sparman says he used them in such circumstances at the Cape of Good Hope, with the happiest results.

Though it be conceded that no remedy is comparable to these baths for exciting perspiration, yet we must not imagine that all the fluid trickling down the skin is condensed perspiration. It is, in fact, in the majority of cases, nothing but simple watery vapour. Such, however, is the importance attached to its appearance by many very excellent physicians, that they are disposed to ascribe the wonderful benefits obtained from the baths of Pfeffer and Baden, to the quantity of vapour arising from these waters. I have already had occasion to mention the extensive use of vapour baths in the north of Europe. It is also well known, that the aborigines of our own continent habitually resort to them in almost every disease. The method practised by the Indians is not very dissimilar to that employed by the Russians. It consists in making a sudatory formed by a frame work of several poles stuck in the ground, and meeting at top, covered by skins or blankets, laid on with so much nicety as to leave no crevice for the introduction of the external air. In the middle of this confined building, they place red hot stones, on which they pour water till a steam rises that produces a great degree of heat. The persons thus closely confined and steamed, are soon thrown into a perspiration, which may be increased to any extent. Having continued in it for some time, they immediately hasten to the nearest stream and plunge into the water, where, after remaining for half a minute, they put on their clothes, sit down, and smoke with great composure, thoroughly persuaded that the remedy will prove efficacious. "They often make use of this sudoriferous method to refresh themselves, or to prepare their minds for the manage-

\* I have seen several fingers of a gouty gentleman anchylosed, and he attributed this state to *dry* vapour employed in the paroxysm of the disease.



ment of any business that requires uncommon deliberation and sagacity.”\*—*Carver's Travels*.

That for which the people of the north are indebted to art, is prepared by nature herself in many places by means of vapours, which issue from the earth in the vicinity of volcanoes, or from hot mineral springs, as at Aix la Chapelle, Balaruc, Burscheid, Lucca, Island of Ischia, and the dry sudatories of Baiæ and St. Germain, near Naples.

Unquestionably, a great number of chronic disorders of the skin, inveterate pains of long standing, and indolent swellings, both of the articulations and other parts of the body, might be either removed or much alleviated by these vapour baths.

*Of Douches, or Spout Baths.*—If, says Franceschi, we except what little we meet with among the ancients, and particularly in Celsus and Celsus Aurelianus, it would seem that the practice of local bathing in the manner at least as practised by the physicians of Italy, France, and Germany, was unknown to the Greeks, and even to the Romans. No Greek or Latin vocabulary expresses what is now properly understood by the term douche, (*doccia*,) nor is what is said of Hercules, or according to Cocchi, of Silenus, represented under the jet of fountain, sufficiently clear on this point. I think, however, that the advice of Celsus to any one labouring under headache, *per æstatem id bene largo canali quotidie debet aliquandiu subjicere*, (Lib. I. cap. IV.) contains an evident allusion to the douche. It is true, that the stillicidium, aspersion, and pouring of cold water, of which the ancients made so much use, either after the cold bath or to disperse the remains of asthenic disease, give us a very different idea from that which we receive by the term douche—hence, the one ought not to be confounded with the other.

\* Dr. Barton, in his *Collections for an Essay towards a Materia Medica of the United States*, mentions a fact, which, though not coming directly under the present head, is worth repeating. The Indians of Demerara, he says, excite an universal sweat, or rather vesication, in cases of dropsy, by covering the whole body with leaves of a plant called by botanists the *dracontium pertusum*. A cure is often produced.

The douche, properly so called, consists in a jet of water which is directed from a cistern, destined for the purpose, by means of one or more tubes, over any required part of the body; and as this water may fall from a greater or less height, so may also the size of the column be increased and diminished at pleasure by using tubes of various diameters, but so contrived as to be always kept full by the column of water above.\* A douche is vertical, oblique, or ascending. The oblique douche, or the one the jet of which forms an acute angle with the ground, is, however, that most generally employed, and may be considered as the only one necessary for obtaining all the effects desired.

It is a common error to attribute almost the whole efficacy of the douches to the shock alone, estimating as of little importance the degree of heat of which the water is the conductor; whereas temperature ought to be regarded as the principal agent in the wonderful effects produced by this remedy. It has frequently been Franceschi's lot to observe at the baths of Lucca, that not a few inveterate obstructions of the abdominal viscera, indolent ulcers, or those accompanied by necrosis, and other similar affections, after having resisted a protracted use of the douche below 100 degrees F. (30° R.) have been rapidly removed by a more elevated degree of heat, although the impetus of the water was the same in both cases. It must then be conceded, that the efficacy of douches is, in a great degree, referable to the action of the caloric, rather than to the mechanical impression.

Douches, though applied to a particular part of the body, act on the same principles which govern the effects of baths; and hence, they are susceptible of the same division as the latter into *cold*, *cool*, *warm*, and *hot*.

The douche may be used so cold as to be near the point of congelation when we want to procure a diminution of excessive excitement, as in *phrenitis*, hypersthenic *cephalgia*, mania, *otitis*, ophthalmia, and, finally, in all those

\* Something similar to this is the *dry pumping* at Bath, in England.

cases where the head shows the predominance of that state by which the whole system is affected ; the saying of Celsus being very true, that nothing is of so much service to the head as cold water, *capiti nil æque prodest atque aqua frigidi*. This assertion must, however, be received with some reservation. I have seen, or speaking more positively, I have suffered for months, at school, from a severe and almost continued headache, which I had reason to believe subsequently was greatly aggravated, if not caused, by dipping my head every morning in very cold water, a practice common with most of my school-fellows at the time. Little benefit can be expected from either immersing the head or receiving a douche on it, when the headache is caused by or accompanies dyspepsia. Where, on the other hand, much local determination, and arterial, and even nervous excitement prevails, we may hope for great advantages from the remedy. Dr. Fontana relates two cases of melancholic delirium cured by cold applications to the head, after all other remedies were found unavailing. The cold douche is useful in all those circumstances in which we wish to lower the excitement by a sensible abstraction of heat. To this remedy alone does Franceschi attribute the cures which he obtained of excessive, sanguineous, and mucous discharges. In such cases, however, it is necessary that the spout, like cold bathing, should be continued for some time.

But as it is to the hot douches that we principally have recourse to, because adapted to a more extensive tribe of diseases, that is, those of a hyposthenic nature, and which from their duration acquire the name of chronic, so I propose now treating of these alone.

If we except the ascending douches, adapted chiefly to asthenic, uterine, or intestinal affections, and which ought never to exceed 98 degrees F., and those which we use to stimulate the brain and medulla spinalis, as in hemiplegia, by applying them to the cervix, to the back or the os sacrum, when it is necessary, they should be about 100 degrees F. and no more ; we can never have a douche of any efficacy if it be not from 106 to 112 degrees of F. (33 to



35° R.) This degree of heat, which cannot fail to produce the greatest derangement in the parts above mentioned, especially in sthenic subjects, agreeably to the opinion of Galen, *calidarum aquarum usum noxium esse capitibus natura calidis*, is found to be indispensable when we want to overcome morbid congestions in the abdominal viscera, to revive the languid action of the stomach and intestines, and in all those local affections that require either the detersion of an indolent ulcer, or the exfoliation of bones attacked by necrosis, or the resolution of any engorgement that may have its seat in the glandular system.

The maxim that hot douches ought only to be adopted in asthenic diseases, or to correct or heal hyposthenic local complaints, has been generally recognized. If next we proceed to inquire into the hour of the day best adapted to the use of this remedy, and the duration of its employment, we shall find that, excepting the douche applied to the head, and that to the various digestive organs, which latter should only be used when the stomach is clear of food, it may be had recourse to at any hour of the day; though, if a choice can conveniently be made, the morning will be found the best time, as that in which the system is endowed with the largest share of susceptibility to the impression of different stimuli. Experience teaches that the internal douches may be used even in the afternoon without any injury resulting. The same may be said of spout bathing to other parts.

The period during which the douche may be used, will depend on the condition of the patient, or the nature of the disease itself. The most usual lapse of time is from twenty to thirty days; but we often meet with diseases, which, not having yielded to the number of douches indicated, were finally overcome by a continued perseverance in their use.

The duration of the douche daily may be from a quarter of an hour to an hour, depending entirely on the respective constitutions of the patients and the sum of their strength. Those who prolong it beyond measure, are often liable to asphyxia, vertigoes, and other inconveniences, which commonly vanish with a suspension of the remedy,

or by simple exposure to the open air. In general, when we use hot douches, the time of desisting from them ought to be that in which perspiration being converted into a copious sweat, inundates the whole surface of the body and trickles in large drops from the forehead.

On discontinuing the douche, especially after it has been applied to the abdomen, great benefit is derived from entering a warm bath, to moderate, in some measure, the excess of heat which occasionally produces for some time a disagreeable sensation in the affected parts.

I have been the more minute in describing the process of spout bathing, and the states of the system and nature of the diseases in which experience has proved its efficacy, from its being a method of bathing on which the English physicians have laid little stress, but which the almost concurrent testimony of the most enlightened continental ones to its singular power and utility, ought to lead us to adopt and apply to a circle of local and general diseases of a very untractable character. The only natural hot spout bath, or douche, which I have ever seen in the United States, is at the Hot Springs, in Virginia. It is of the temperature of 103 degrees of Fahrenheit. But it is very evident that this mode may be practised with very little trouble or expense in the houses of individuals, as well as all public establishments, for bathing. A common teakettle filled with hot water, may be made to answer the purpose; or if the spout bath is to be long continued, a boiler, such as is used in wash-houses, may be very readily filled up, so as to give a proper supply and fall of the warm or hot water on the body of the individual, or any required part of it. When, however, I point out the facility with which every head of a family can provide a proper apparatus for this purpose, let me not be understood for a moment as intimating the propriety of the general or indiscriminate use of the remedy, without professional advice or superintendence. The very activity of this agent is sufficiently indicative of its pernicious effects when its use is not properly timed and regulated.

I shall conclude this part of my subject by a more parti-

cular specification of the different maladies in which the hot douches have been found singularly efficacious, and an indication of the cases aggravated by them.

In *tumefactions* of the joints, or of the viscera, without fever or pain, they may be freely applied over the affected part. In simple *physconia*, whether produced by enlargements of the liver or spleen, without phlogosis, the remedy often entirely relieves, especially if alternated with the warm baths. It is also highly proper, indeed necessary, to begin with the administration of some purgative medicine, and repeat the same after a few days spout bathing. In that state of the body termed cachetic, the consequence of derangement in the stomach, liver and spleen, among the residents of marshy countries, and distinguished by a pale or sallow complexion, puffy skin, swelled extremities, languor, and disinclination to motion of any kind, this bath often acts like a charm. It may be used on different parts of the abdomen, or occasionally on the chest and along the back.

In *paralysis*, where we may hope that there is little alteration in the nervous structure of the brain or spinal marrow, and where the patient thus afflicted is not of a plethoric habit, or liable to great determination of blood to the head, the hot douche applied alternately to the head, nape of the neck, and along the spine, is often our only resource. In nervous exhaustion and debility, where torpidity has taken the place of *erethismus*, or morbid sensibility, our remedy is often of great avail.

In diseases of the *uterus*, depending on atony of that organ, as in *fluor albus*, unaccompanied by heat, *pruritus*, or tumescence of the affected parts, but simply characterized by languid circulation, and pallid and cold skin, and universal languor, we have much to hope from the hot douche, either descending and applied to the os sacrum and over the hypogastric region, or ascending and directed to the vagina and os tincæ. Chlorosis might, under proper restrictions, be materially benefited by the same remedy, applied in the same way.



Similar advice may be given in reference to the *mucous* and *muco-sanguineous* discharges, of a chronic nature, from the intestines, and to *hepatic* and *nephritic* colics. The douche is to be in such cases applied alternately to the abdomen or lumbar region, and in the form of enema.

In swelling of the joints, as already mentioned, whether rheumatic, gouty, or scrofulous, after the subsidence of fever and suitable cleansing of the digestive passages, no remedy can compete with the hot douche, perseveringly used for a length of time, and alternating with friction.

The use of the hot douche is contra-indicated, and ought to be abstained from, during the menstrual or hemorrhoidal discharges, and in all hemorrhages; or in persons prone or liable to sanguineous discharges, whether from a sanguineous temperament, plethoric habit, or other causes. The remedy is equally forbidden in spasmodic affections of the stomach, or in cardialgia, from augmented sensibility of this viscus. In fine, all diseases of an inflammatory character will be aggravated by the use of the hot douche.

### *Of Mineral Waters.*

A brief sketch of the history of mineral waters, and a summary notice of their chemical divisions, utility, and general effects, will, very properly, precede a more particular account of the springs of each country, and a specification of the diseases in the cure of which they are thought more peculiarly efficient.

The discovery of the good effects of mineral springs was, no doubt, due to accident rather than from any preconceived opinion of their merits. These once ascertained, the cures they effected were held in traditional remembrance, and induced others to try the same means of relief. The history and experience of consecutive ages, have tested the correctness of early belief, and convinces us, that, with suitable restrictions and reservations, a remedy so bountifully and liberally supplied by nature, is generally an useful supplement, and, at times, of paramount value to others of more prompt and energetic action.

The Greeks, whose knowledge of medicine was greater than that of the nations who had been their precursors, paid honours to warm or thermal springs, as a benefaction by the Deity, and dedicated them to Hercules, the god of strength. They made use of them as drink, for bathing, and as topical remedies. Hippocrates tells us of warm springs impregnated with copper, silver, gold, sulphur, bitumen, and nitre ; and forbids their use for common purposes. Aristotle taught, that there mingles with the waters of warm springs vapours of different kinds, which constitute their chief virtue. Strabo describes a miraculous spring, to which he attributed the property of breaking down stone in the bladder, and evacuating the pieces from it. Theopompus indicated one which cured wounds. Archigenes counsels the drinking of mineral waters in diseases of the bladder, in quantity varying from one to ten or fifteen pints. Many Greek physicians employed this remedy against elephantiasis, colic, paralysis, and nervous affections. Galen makes the eulogium of a *bituminous* and *martial* water, made use of by those who were subject to the gravel. He forbids the drinking of mineral waters to those who have any *astriction*, *acerbity*, *aridity*, or *acrimony* of the humours.

In fine, without following the author, to whom I am indebted for this sketch,\* in what some may think a mere parade of learning, it is sufficient to add, that mineral waters was a familiar remedy with the Romans, who made a habitual use of those of Italy. Horace praises the baths of St. Casciano, in these lines:

“ Qui caput et stomachum supponere fontibus audent  
Clusinis.”

Vitruvius, and still more Seneca, the philosopher, enters into details respecting the virtues of particular kinds of waters for different complaints. Pliny, in his Natural History, treats of acidulous, sulphurous, saline, nitrous, aluminous, martial or ferruginous, and bituminous waters. Orbasius, who lived under the Emperor Julian, speaks much

\* Patissier—Manuel des Eaux Minérales de la France.

of natural mineral waters ; and gives good precepts for the employment of the ferruginous ones, which he recommends in affections of the stomach and liver. He gives some sketches of the spiritous waters now called acidulous, and thinks them beneficial in disorders of the senses. *Ætius*, born A. D. 455, appears to have occupied himself greatly with mineral waters. He prescribes the aluminous and sulphurous for nervous and rheumatic affections, and especially for leprosy, itch, and herpes. He lauds ferruginous or chalybeate waters in chronic diseases of the liver and stomach.

In all the countries over which the Romans obtained dominion, they sought out mineral springs, and more especially warm and hot or thermal ones, because they had experience of their efficacy in the cure of wounds. Out of gratitude to the benefits which they experienced from the use of these springs, they decorated them with edifices, the remains of some of which are visible to this day. Each fount was placed under the protection of some tutelary divinity. The priests of paganism, abusing the credulity of the invalids, invented certain religious ceremonies, which were insisted on as indispensable for obtaining a cure ; and the inscriptions still seen on the walls of some of the enclosing edifices, show that the cures performed in those times were attributed less to the efficacy of the waters than to the kindness of the presiding goddess. The fall of the Roman empire was followed by the destruction of all these establishments, which the ignorant zeal of the age then regarded as heathenish and unworthy of Christian countenance and support.

In the tenth century, when medicine was more especially cultivated by the Arabians, mineral springs were held in some repute.

In France, the mineral founts were deserted until the time of Charlemagne. This prince, convinced of their utility, had constructed at Aix la Chapelle a vast basin for himself and children to bathe in. Occasionally, he held his court, or met his council, in the bath. His death, and the



division of the empire, replunged France into ignorance and barbarism, and brought about the loss of bathing as well as other establishments of a still more important character.

It was only at the end of the 15th century, that physicians began to pay attention to mineral waters, and the Italians were the first to revive their ancient celebrity. In 1498, John Michael Savonarola, of Padua, composed a treatise of some length on baths in general, and more particularly on the thermal waters of Italy. Andrea Baccius published in 1596, a work on the most celebrated thermal waters of Europe, and indicated some processes by which to recognize their principal ingredients. Until then, the mineral springs were the rendezvous of gamesters and provincial buffoons; and the superintendence of the waters was left to quacks, who readily imposed on blind and superstitious credulity.

Henry IV., who, during his youth, had frequented the springs of the Pyrenees, and witnessed the abuses in the employment of so useful a remedy, sought to correct them after his accession to the throne of France. He nominated, by edicts and letters patent, in 1603, superintendents and superintendent-generals, who were charged with the entire control over the use of the mineral waters, baths, and fountains of the kingdom. These edicts were confirmed by Louis XIV., Louis XV., and Louis XVI. Most of the mineral springs and bathing establishments on the continent of Europe, are placed under a somewhat similar superintendence, and a resident physician is also appointed by the government. The properties of mineral waters were now every where studied with great industry and zeal. Fagon examined with care those of Bonnes and Baréges, in order to ascertain their probable utility in the cure of fistula *in ano*, under which Louis XIV. suffered. Chirac was occupied with the waters of Balaruc, in reference to a wound which the Regent had received. Already had the springs of Aix la Chapelle, Spa, Baréges, Cauterets, Bagnères, and Bourbon-l'Archambaud, drawn to them a great number of invalids and sick, who went with confidence to these

several places in pursuit of health. In some provinces, certain fountains were placed under the protection of some saint, and, at a particular epoch of the year, crowds visited them to invoke the assistance of Heaven, and to purify themselves.

About the end of the seventeenth century, we find a great number of chemists and physicians speaking with enthusiasm of the mineral waters of their respective countries. Conrad Gesner lauded the thermal waters of Switzerland; Hoffman those of Germany; Allen and Lyster celebrated the waters of Bath and Buxton; whilst Boyle sketched a general treatise on mineral waters. In Italy, the warm and hot springs of Lucca and those of St. Julian, near Pisa, had a host of writers to set forth their virtues. The first had attained some note as early as the twelfth century, when the celebrated Countess Matilda built a bridge for the more easy access to them, and made other useful additions.

From 1670 and 1671, when the Academy of Sciences at Paris appointed two of its members, Duclos and Bourdelin, to make the analysis of all the mineral waters of France, down to the present time, the chemists have always been desirous of fixing, with some precision, the constituent parts of such waters, and of improving the preceding methods of minute analysis. In 1766, Bayen indicated the means of separating the sulphur from sulphurous waters; and Monnel, in 1768, and Bergmann, in 1774, discovered the hepatic gas, (sulphuretted hydrogen.) To the celebrated chemist of Upsal, more than to any other, are we indebted for introducing system and clearness in the analysis, and indicating the best means for the recomposition of mineral waters. The first he contended could never be correct unless, by means of the principles extracted, the latter could be fully accomplished. Vauquelin, Deyeux, Thenard, and Davy, have greatly advanced our knowledge of the subject at the present time.

While the chemists were thus engaged in discovering the composition of the several mineral springs, the physicians

were not backward in observing and recording their effects on the human frame, and determining the cases in which they are beneficial, or when they are injurious. The French government, enlightened on this point, caused hospitals to be erected at some of the most celebrated of the mineral founts, in which the military and the poor were attended to gratuitously, under the inspection of a physician, whose province it was to see to the judicious use of the waters and the relief of the infirm. It would well comport with the liberality and humanity of some of our state governments, to erect edifices of a similar nature in the vicinity of some of the most active and celebrated of our mineral and thermal springs. The rich invalid would find his interest in the accomplishment of such a scheme, in the precision and certainty with which the waters could be prescribed for him, after their effects had been so fully tested on a large number of individuals placed under the entire control of the physicians; of course, in circumstances the most favourable for ascertaining the salutary operation of the remedy.

Added to this, the physician thus situated has it in his power to keep a regular record of all the cases placed under his direction; and while watching with a scrutinizing eye the good or bad effects of the mineral water, almost insensibly becomes the historian of chronic or lingering diseases in general, and of the means best calculated to cure them, or, at least, suspend for a season their fatal course.

It was by opportunities of this kind that Theophilus Bordeu was enabled to present the profession with his celebrated work entitled *Recherches sur les Maladies Chroniques*, an analysis of which may probably soon be placed before the public by a friend, who, by his intelligence and industry, has already contributed to the usefulness of this Journal.

The epithet of *Mineral*, has been applied by chemists and physicians to every water issuing from the earth, and impregnated with mineral or saline substances to such an extent as to receive a strong taste, and fitting it for a common beverage, and yet imparting to it such properties as to



render it an useful agent when drunk in a great number of diseases. The term *mineral water* has been objected to as not sufficiently distinctive, since common water, whether rain or river, contains mineral substances; and hence, it has been proposed to substitute the title of *medicinal* or *medicamental*. But as there is a general understanding and sameness of opinion among all writers and medical men respecting the meaning which we are to attach to the expression *mineral waters*, it would savour too much of affectation to attempt any innovation at this time; and I shall, of course, retain and continue to use the old term.

It is usual with most writers on mineral waters, to premise some account of the virtues of common water, as an article of diet and as a medicine; but the tolerably copious disquisitions into which I have been led on this subject in former numbers of this Journal, preclude the necessity of my noticing it on the present occasion. I would merely beg leave to remind my readers of the opinion entertained by Hoffman, Fordyce, Saunders, and a host of other distinguished names in medicine, of the decidedly efficacious and salutary operation of common water, taken in quantity at certain intervals—an opinion the accuracy of which has been tested by thousands, who in their own persons have felt its benign influence. It need then excite but little surprise if some writers are found who seem disposed to refer all the good effects of mineral waters to mere dilution by their aqueous portion alone, while others qualify somewhat this position by adding the additional agency of temperature. “As an example of the similarity of operation in very different waters, and which may certainly in a good measure be ascribed to the mere liquid, we may mention, that transient determination to the head is often produced in delicate habits by the first exhibition of any of these waters. We find this circumstance noticed in the purest springs, and those that are the most free from foreign contents, as well as in every other water.”

The author of this remark, Dr. Saunders, then proceeds to enforce it, by adducing the testimonies of different

writers, that the waters of Malvern, Bristol, Lauchstadt, and the hot Caroline baths in Germany, all cause a certain drowsiness, with vertigo, and occasionally a dull pain in the head—though these several springs differ much from each other in their chemical composition—that of Malvern containing no metallic principle. I have often found a half-pint tumbler-full of common hot water produce the same effects. The opinion of the celebrated Vacca Berlinghieri of Pisa, is corroborative of that just enounced. “These are mere visions,” says he, “of even the most esteemed physicians, by which it is pretended to explain and insist on the salubrious properties of waters from their fixed or volatile principles, and by what mechanism each different mineral water accomplishes the cure of various diseases. The fact is, that hot mineral waters, although, according to chemical analysis, they may differ in their ingredients or in the quantity of them, all coincide in curing the same diseases, with the sole variation of being, in different cases, one less efficacious than another.”\*

While I concede, to a certain extent, the sameness of operation and effects between common and mineral water, I cannot, however, admit their entire identity, as remedial agents. One very obvious difference immediately strikes us, namely, the utility of common water, or beverages consisting almost exclusively of water, with some bland substance, in fever and acute diseases, whereas mineral water is in such cases not simply of equivocal benefit, but absolutely hurtful. Again, in various chronic diseases, distinguished by inertia, a languid state of the digestive apparatus, and abundant mucous secretions, common water will tend rather to aggravate such a state—when, on the contrary, a fluid with saline and mineral impregnation will prove of decided efficacy. In fine, if I might use language nearly exploded, though sufficiently expressive, I would add, that common water taken largely as a diluent will be found extremely salutary in the *strictum* state of the sys-

\* *Saggio intorno alle principali malattie del corpo umano.*

tem, and mineral water of equal power in the *laxum* state : the first being the remedy for impeded or obstructed secretion ; the latter, the one for excess in the same function. Common water acts indirectly on the organs of the living body by neutralizing noxious or acrimonious matters, and facilitating their egress. Mineral water has a decided and independent action on the same parts, particularly on the mucous surface of the stomach and intestines, and on the circulatory apparatus by absorption. I am justified, then, from all that has been advanced, as well in the first part of my subject on baths as in that just discussed, in laying down the following propositions :

1st, That mineral waters used for bathing, or douching, on a sound cuticle, act mainly in virtue of their caloric.

2d, That when taken into the stomach or intestines they have a double operation—the one common, and generally uniform, depending on their basis, or their pure watery vehicle—the other proper and peculiar, being the effect of the saline and mineral substances held in solution.

3d, That if used under the form of bath or douche, the action of these chemical principles will have little or no effect, except upon those parts which are deprived of their natural covering, or skin—of course no effect on the general system, except through those parts thus denuded.

The small proportion of foreign ingredients in mineral waters, compared with the quantity of the same substances prescribed in medical practice, has created surprise in the minds of some, and incredulity in others, at the alleged efficacy of the former, when the latter in so much larger doses has been attended with comparatively trifling results. In reply to this, it is only necessary to remind my readers of a few tolerably familiar principles in physiology and therapeutics. First, we know that the action of many remedial agents, chiefly of the stimulant and narcotic tribes, is primarily and almost exclusively exerted on the stomach, and by sympathy on the rest of the system. Solids, vegetable and metallic, in small bulk, and taken without much dilution are nearly equally local, in their first effects, with the



occasional extension of the points of application to the surface of the intestines : but in either case their action is diffused by the same law of sympathy. In the second place, as the whole mucous surface of the stomach and intestines has this great sensibility to the impression of ingesta of every kind, especially those of a remedial nature, it is very obvious that the sensations produced by this means will be active, and their diffusion through the system, by nervous agency or sympathy, prompt and general, in proportion to the extent of surface acted on. Now mineral waters taken usually in considerable quantity, so as to fill the stomach, and pass promptly into the intestines, are so applied to these parts as to enable their saline and metallic ingredients to act on almost the entire surface of the digestive tube, and of course to produce all the effects which we could desire from such ingredients : effects not to be expected from them, even though in larger quantities, when applied but to a few points, or limited extent of surface. Finally, the experiments of late years have most satisfactorily established the fact of absorption of various substances, nutritive and medicinal, and above all fluids by the veins of the stomach and intestines, as well as the lacteals, without, in many cases, these substances losing their distinctive characters—nay, farther, that the peculiar and specific action and effects of various agents is as operative when taken or injected into the veins as when taken into the stomach.\* It is then hardly necessary, after such preliminaries, to draw the inference in which most readers will have anticipated me, namely, that the absorption of the mineral water drunk in large quantities must be prompt and abundant, and consequently that the different ingredients of which the fluid was the menstruum, being thus thrown into the circulation, will produce varied and decisive results, such as could not be expected from any other mode of administration.

We can now, without much hesitation, say, in the words of a writer already quoted,† “ In general, mineral waters

\* Majendie.

† Patisserie.

revive the languishing circulation, give a new direction to the vital energy, re-establish the perspiratory action of the skin, bring back to their physiological type the vitiated or suppressed secretions, provoke salutary evacuations, either by urine, or stool, or by transpiration: they bring about, in the animal economy, an intimate transmutation, a profound change; they saturate the sick body, to make use of the energetic expression of a modern author. How many sick persons, abandoned by their physicians, have found health at mineral springs! How many individuals, exhausted by violent diseases, have recovered, by a journey to mineral waters, their tone, mobility, and energy, to restore which, attempts in other ways might have been made with less certitude of success."

After all, we find physicians, who, while they admit the good effects of visits to mineral springs, and the removal of diseases in consequence, deny still the agency of the waters in such benefits and cures, and attribute all to the exercise in travelling, to amusements, change of air, and mode of living. These are no-doubt contributing, and not unfrequently all powerful causes of the relief of many hypochondriacal and nervous affections, so called. But are they adequate to the cure of chronic rheumatisms, paralysis, visceral engorgements, cutaneous eruptions, incipient anchyloses, fistulous wounds, &c.?

I wish not, from the opinions hitherto advanced, to be ranked among the number of the chemical physicians, who, having discovered the proportion of each foreign ingredient in the mineral spring, and studied its operation on the economy, pretend to determine the general effect of the compound. We may, indeed, by a knowledge of the constituent parts, predict, to a certain extent, the medicinal power of a drug: but it is only by multiplied facts, that is, by experience of its use, that we can speak positively of its virtues. Where experience is explained by reasoning, and enforced by analogy, we may give our confidence, and on these grounds it is claimed in favour of mineral waters.

Like every other remedy of any efficacy, they are sus-

ceptible of abuse, and producing consequent injury. Hence these waters are generally prohibited to persons threatened with any acute disease, or who feel the preludes to it, such as chill, headache, spontaneous lassitude—also in cases of scirrhus tumours, or those tending to internal abscesses or effusions. They are, moreover, to be employed with great caution by those with much irritability and highly exalted sensibility.

It very frequently happens, however, that an invalid, whose state would be at first aggravated by drinking from a mineral spring, if nothing is premised, will, after the use of some active medicine, such as a few mercurial purges—and, if arterial action be somewhat considerable, the abstraction of some blood, be enabled to commence taking the waters, and persevere in their use with decided advantage. In other cases, remedies of different kinds are recommended to second their action, and be employed in conjunction with them. Hoffman lavished the greatest eulogiums on milk with mineral water. In the treatment of scrofula, Theophilus Bordeu obtained signal benefit by the union of mercurial frictions with the use of the waters of Baréges. But these, and other combinations and alternations of treatment, can only be confidently recommended by physicians always residing at the springs, and intimately acquainted with all their shades of action and operation. The general rule, which may with safety be laid down for the guidance of those about to use mineral water, is to have their primæ viæ well cleared of fæcal and mucous collections, and to bring down, as nearly as may be, the circulation to a natural standard.

It is not to be expected of me, in this place, to repeat the prolix instructions given by most writers on bathing and mineral waters, for the guidance of those who wish to avail of these means for the restoration of their health. Sleep, diet, exercise, ought to be conformable to the respective habits and temperaments; and a residence at springs ought neither to be taxed with privations, nor made subservient to debauchery. The period of sleep



ought not to exceed eight hours in any case, and not unfrequently six will be found all sufficient. That food, which at home is thought easy of digestion and nutrimental, may be used at the springs—and the invalid must never so far forget himself as to imagine that the mineral water which he may drink will prove an antidote against the poison of the kitchen or the cellar. The exercise may be on foot, horseback, or carriage, according to circumstances—the two first are preferable. Attention to clothing of suitable stuff and thickness, always important in chronic diseases, is doubly so when the sufferers under them are at mineral springs. Sydenham has said, that the fashion of changing the dress with each season killed more persons than gunpowder. If, then, a selection is to be made, and change forbidden, in northern or temperate latitudes, let the invalid and visiter to mineral springs take with him and use his winter garments. On such occasions he will almost invariably find himself in situations where mountains are in the vicinity of deep valleys, and where, of course, the air is humid and cool. In fine, we may sum up in a few words, by repeating, after the great Father of Medicine, that all excesses are dangerous—a maxim every one must have fully tested the correctness of. Eating much in the evening, sitting up late, prolonged and immoderate dancing, remaining too long in the cool air of the evening, are often the causes of many unpleasant complaints, which might have been easily prevented. The passions are to be kept in check, by avoiding every exciting cause, either of the boisterous or melancholy kind—a giddy chase after pleasure, and luxurious indulgence, are scarcely more reprehensible than an indolent and secluded life. It may, after all, appear ridiculous, in the midst of woods and rocks, to make those sacrifices to fashion, which are barely supportable in the crowded and wealthy capital.

As relates to the systematic division of mineral waters, each writer has his own. Fourcroy divided them into nine classes—Duchanoy into ten—Monnet into three. The simplest arrangement, and at the same time sufficiently in-

dicative of their properties, is that of Bergmann, slightly modified by Patissier, and Murray. It consists in classing them under four heads: viz.

- A. Hydrosulphurous, or sulphureous.
- B. Acidulous, or carbonated.
- C. Acidulated ferruginous, or chalybeate.
- D. Saline.\*

There is a general division of mineral waters into cold and thermal, which shall be first attended to—then their classification in the order just laid down—and lastly a brief summary notice of the principal ones in geographical order, according to the countries in which they are found. Though this plan leads somewhat to repetition, it will furnish the memory with those associations and references all of which are found necessary on such an occasion. I shall give first the thermal waters.

#### PRINCIPAL THERMAL SPRINGS OF EUROPE.

##### *In England.*

					Fixed Temp.
Bath, <i>Cross Bath</i> , fresh drawn,	112,	-	-	-	92 to 94†
King's Bath,	-	-	116,	-	- 100 to 106
Bristol Hot Wells	.	-	-	-	- 74
Buxton	-	-	-	-	- 82

##### *In France.*

Aix (near <i>Marseilles</i> )	-	-	-	-	- 95
Ax (near <i>Thoulouse</i> )	several springs	-	-	-	- 90 to 169
Bagnères de Luchon (near the <i>Pyrenees</i> )		-	-	-	- 86 to 145
Bagnères Adour (near <i>Baréges</i> )	sulphureous and				
chalybeate	-	-	-	-	- 86 to 102
————— saline springs					97 to 138
Balaruc (near <i>Montpelier</i> )	-	-	-	-	- 115
Baréges (near the <i>Pyrenees</i> )	-	-	-	-	- 88 to 113

\* This differs but little from the division of mineral waters, by Murray of Edinburgh, into 1. Carbonated; 2. Sulphureous; 3. Saline; and 4. Chalybeate.

† The temperature is expressed by the degrees of Fahrenheit's scale.

	Fixed Temp.
Bonnes, or Aigues, ( <i>near the Pyrenees</i> )	- 86 to 91
Bourbon l'Archambault, several springs	- 100 to 140
Bourbon Lancy, several springs - -	- 109 to 135
Bourbonne les Bains - - - -	- 104 to 136
Cambo ( <i>near the Pyrenees</i> ) - - -	- 73 to 95
Cauterets ( <i>near the Pyrenees</i> ) - -	- 86 to 112
Chaudes Aigues - - - -	- 190
Dax ( <i>near Bayonne and Bordeaux</i> ) -	- 88 to 142
Foncaude ( <i>near Montpellier</i> ) - -	- 77
Gréoulx ( <i>fourteen leagues from Marseilles</i> )	- 86 to 97
La Maloux ( <i>fifteen leagues from Montpellier</i> )	- 97
Mont d'Or, several springs - -	- 108 to 113
Nevis, several springs - - -	- 120 to 126
Olette ( <i>near Perpignan</i> ) - - -	- 190
Plombieres, several springs - -	- 90 to 144
Rennes, several springs - - -	- 104 to 124
St. Amand ( <i>near Valenciennes</i> ) - -	- 64 to 80
St. Sauveur ( <i>near the Pyrenees</i> ) -	- 95
Vichi ( <i>on the River Allier</i> ) - - -	- 72 to 114

*In Germany.*

Aix la Chapelle, or Aiken, several springs	- 110 to 143
Baden ( <i>in Swabia, near Strasburgh</i> ) -	- 113 to 149
Buda Springs ( <i>Hungary</i> ) - - -	- 100 to 135
Carlsbad, or Caroline Waters, ( <i>Bohemia</i> )	- 114 to 165
Groswarden ( <i>Hungary</i> )	
Wisbaden ( <i>near Mayence and Frankfort</i> )	- 154

*In Switzerland.*

Baden ( <i>near Zurich</i> ) - - -	approaching 212
Leuk, or Leoche, several springs - -	- 111 to 124

*In Italy.*

Aix ( <i>in Savoy</i> ) - - - -	- 113
Acqui ( <i>ten leagues from Genoa</i> ) - -	- 100 to 167
Ischia, island of, <i>Gurgitella Spring</i>	- 157
----- <i>Olmitello and Citara</i> -	- 98



	Fixed Temp.
Lucca, three springs - - -	84, 111, and 129
Montecatini ( <i>in Tuscany</i> ) - - -	- 72 to 90
Pisciarelli ( <i>near Naples</i> ) - - -	- 98
Pozzuoli, ( <i>near Naples</i> ), several springs -	86 to 101
Padua, several springs - - -	- 159 to 187
St. Casciano ( <i>Tuscany</i> ) - - -	- 106 to 113
St. Gervais ( <i>in Savoy near Geneva</i> ) -	- 106 to 110
St. Germain ( <i>dry vapour bath near Naples</i> ) -	122
St. Julian ( <i>near Pisa</i> ) - - -	- 84 to 106
Tritoli, or Nero's Baths, ( <i>moist vapour near Naples</i> ) - - - -	- 170

*In Portugal.*

Caldas da Rainha (*twelve leagues from Lisbon*) 92

Of the thermal springs of Spain,\* Sicily, and Greece, I am not at this time prepared to speak. The classical reader need not be told, that the far famed Thermopylæ derived its name from the hot springs in its vicinity.

The classification of mineral waters under the four heads of hydrosulphurous, acidulous, acidulated ferruginous, and saline, requires that I should next present to my readers the names of the most celebrated medicinal springs under these several heads. Each admits of a subdivision into thermal and cold.

\* Spain, as might naturally be anticipated from the geological features of the country, abounds in thermal springs, some of which were in high repute during the period of Roman occupancy, and subsequently under Moorish dominion; but they are now most of them neglected, or resorted to on the strength of their traditional fame, without any knowledge of their chemical nature, or correct specification of their medicinal powers. Of the more than one hundred warm and hot springs mentioned by Laborde, in his account of Spain, the temperature of one only is given, that of Gitana, 104 degrees of Fahrenheit, four leagues from Alicant. The springs of Sacedon, not far from Madrid, have obtained more celebrity from their being resorted to by the Monarch and his court, than from their possessing any very decided curative powers. Sacedon is within a quarter of a league from the hot springs of Fuente del Rosal.

## A.

1. *Thermal Hydrosulphurous Waters, or simply Warm and Hot Sulphurous Springs.*

Aix, ( <i>Savoy</i> ),	Cauterets,
Ax,	Fuente de la Sama, ( <i>in Granada</i> ),
Aix la Chapelle,	Grévoulx,
Acqui, ( <i>near Genoa</i> ),	Ischia,
Baden, ( <i>Swabia</i> ),	Leuke,
Baden, ( <i>Switzerland</i> ),	Olette,
Bagnères Adour,	Padua,
Bagnères de Luchon,	Pozzuoli,
Barèges,	St. Amand,
Bonnes, or Aigues Bonnes,	St. Sauveur,
Cambo,	Wisbaden.
Calda da Rainha,	

2. *Cold Hydrosulphurous Waters.*

Harrowgate,	Montmorency.
Moffat,	

## B.

1. *Thermal Acidulous, or Carbonated Waters.*

Foncaude,	Mont d'Or,
La Maloux,	St. Julian,
Montecatini,	Vichi.

2. *Cold Acidulous, or Carbonated Waters.*

Gabian,	Seltz ( <i>nine leagues from Stras-</i>
Santa Lucia, ( <i>in Naples</i> ),	<i>burgh</i> ).

## C.

1. *Thermal Ferruginous, or Chalybeate Waters.*

Bourbon l'Archambault,	Rennes.
Carlsbad,	

2. *Cold Acidulated, or Carbonated Chalybeate Waters.*

Bagnères Adour,	Forges,
Boulogne,	Hartfell,

Nancy,	St. Amand,
Passy,	Scarborough,
Plombières,	Spa,
Pyrmont,	Tongres,
Rouen,	Tunbridge.
Rheims,	

## D.

1. *Thermal Saline Waters.*

Aix, ( <i>in France</i> ),	Chaudes Aigues,
Balaruc,	Dax,
Bagnères Adour,	Lucca,
Bath,	Neris,
Buxton,	Plombières,
Bourbon les Bains,	St. Gervais.

2. *Cold Saline Waters.*

Cheltenham,	Seidlitz,
Gamarde,	Seydchütz, ( <i>Bohemia</i> ),
Epsom,	Sea,
Merlange,	Vaccia Madrid ( <i>near Madrid</i> ).

With all my endeavours to condense, the subject is of so extensive a nature, and the materials before me so ample, as to require a postponement, until the next number of the Journal, of that part in which is given an account of the most celebrated of the above mentioned springs.

(*To be continued.*)



ART. V. *An Inquiry into the Discovery of the Tensor Tarsi Muscle, being an answer to the objections of Signior Gaetano Flajani, of Rome.* By W. E. HORNER, M. D. Adjunct Professor of Anatomy in the University of Pennsylvania.

IN the fifteenth number of the Journal was presented an account of the circumstances under which my attention was first called to this muscle. It was also demonstrated, that several of the standard anatomical works of modern times gave no account of it, and that though some of their authors, in their speculations on the manner in which the tears pass from the eye to the nose, felt the necessity of a muscular apparatus, they confessed their inability to find it. The annunciation of this muscle, which was made near two years ago, in the European journals, has attracted the attention of the Italian anatomists particularly. By Signior Trasmondi it is unquestionably admitted as an original observation with myself—by Signior Flajani, the latter is as decidedly controverted. An allusion to this discussion in the July number of the very excellent Quarterly Journal of Mr. Anderson, London, and the expression of an expectation on the part of the editor, that an answer would be given by myself, have induced me to make the following remarks.

Contested points, in regard to priority of anatomical discovery, seldom obtain, or even deserve, much attention from the profession. They are founded too much upon self-love, upon the one side, and, frequently, critical and personal intolerance upon the other, to be carried on with a proper regard to the patience of the public, and to the importance of presenting private and subordinate matters in their most accessible shape. Wishing, therefore, to occupy as little time and space as possible, I shall confine myself to leading points in vindicating my own pretensions, as to the original observation of the tensor tarsi muscle.

It will not be denied that the standard anatomists of France, considering as such Winslow, Sabatier, Bichat,

Boyer, Marjolin, Maygrier, Cloquet, Demours, make no mention of this muscle. That Mangetus and Sæmmering, occupying a similar rank among the Germans, are equally silent. That Antonius and Caldini, having the same position in Italy, and who are the publishers of the most splendid collection of anatomical tables that have yet appeared, are equally silent. That in Holland, Albinus, whose name is forever associated with the muscles of the human body, was unacquainted with this. That in Great Britain, Cheselden, the Monros, the Bells, Innes, Fyfe, Shaw, Green, Hooper, the author of the *London Dissector*, are also silent. That in America, Wistar has overlooked it. From all which, it must be generally conceded, a charge of ignorance, or of inadvertence, as to the labours of their predecessors and contemporaries, against such diligent and successful anatomists, is inadmissible. Under these circumstances, I shall endeavour to refute the authority of some very indefinite accounts of the muscular structure, bordering on the lachrymal sac, which have been considered by Signior Flajani as militating against my own claims, and to show why so little attention has been bestowed on the former by these eminent authors.

For the sake of greater perspicuity, I shall quote from my description of the muscle given in number fifteen, page 71, of this *Journal*. The tensor tarsi muscle "lies on the posterior face of the lachrymal ducts and sac. It is oblong; being in the adult about three lines broad and six long. It arises from the posterior superior part of the os unguis, just in advance of the vertical suture, between the os platum and the os unguis. Running forward for three lines, it bifurcates. One bifurcation is inserted along the superior lachrymal duct, and terminates at its punctum, or near it. The other bifurcation is inserted along the lower lachrymal duct, and terminates at its punctum also, or near it. The base of the caruncula lachrymalis is placed in the bifurcation."

Signior Flajani asserts that this muscle was described by Haller, Schobinger, Duverney, Rosenmuller, and Signior

Alexander Flajani. We find in vol. i. page 234, of Haller's *Disputationes Chirurgiæ*, the following paragraph: "The same sac has about its *exterior* and *anterior* part, a small peculiar muscle arising by its own fibres around the os planum, and extending itself over the above mentioned parts of this sac, which muscle D. Duverney, a zealous anatomist and surgeon of the Royal Garden of Paris, public demonstrator of anatomy and of operative surgery, the cousin german of the very celebrated man just spoken of, (Dom. Duverney,) my most beloved preceptor, first found, and frequently demonstrated to me in various subjects."\*

It is very evident, from this extract, that Schobinger gives the merit of this observation to Duverney, and that Haller has been in no wise connected with it, except in publishing the thesis of Schobinger. It will also be seen, that in the essential points of situation on the sac, of origin, and of insertion, the tensor tarsi muscle is a very different one from Schobinger's. The latter is on the anterior and exterior part of the sac, and is inserted into the same—whereas, the tensor tarsi is on the posterior surface, and is inserted along the lachrymal ducts to the puncta.

Rejecting then, as inadmissibly incongruous, the description of Schobinger, let us take up that of his master Duverney. "The little muscle of the eyelids. This muscle takes its origin from the interior of the orbit, and goes to spread itself out, and to be confounded with the orbicularis, at the middle tendon of the great angle."† Again, in a second work he says, "Of the muscles of the eyes. The or-

\* "Saccus idem circa exteriorum ac anteriorum partem proprio exiguo musculo circa os planum orto suis fibris supra dictam sacci partem sese extendente gaudet, quem strenuus anatomicus ac chirurg. D. Duverney horti regii Parisiensis, anatomix et chirurgiæ operatorix demonstrator publicus, modo dicti viri celeberrimi patruelis, dilectissimus præceptor meus primum invenit et mihi pluries in variis subjectis demonstravit."—Haller *Disp. Chirurg. Dissertatio Medico chirurgica De Fistula Lachrymali quam pro Doctoratu consequendo defendet Jo. Casparus Schobingerus, Sangalo Helvetus Basileæ, August 31, 1730.*

† "Le petit muscle des paupières. Le muscle prend son origine de l'in-



bicularis being detached and turned over the nose, one may, by removing the fat, find a little muscle which takes its origin from the interior part of the os planum, and comes to be inserted into the internal part of the middle tendon opposite the insertion of the orbicularis. I believe that it is not described. It may serve to direct the entrance of the tears into the lachrymal sac."\*

The discordance between this description and mine, must also be extremely obvious. Duverney's muscle arises from the os planum, and is inserted into the tendon of the orbicularis—the tensor tarsi, on the contrary, comes from the unguis, and is inserted along the lachrymal ducts. Besides the all important difference in origin and insertion, Duverney's figure is essentially different. He has furnished a plate of the muscle, in which it is represented as triangular, with its base adhering to the orbicularis, near its tendon, and with an acute angle, whereby it is inserted into the interior of the orbit, apparently, at the lower anterior corner of the os planum, without their being an indication of the slightest connexion with the lachrymal sac. The muscle, in fact, looks like a mere appendage of the orbicularis, the fibres of which do not even change their direction, and are removed considerably from the course of the lachrymal ducts and puncta. For the accuracy of this statement I appeal confidently to the plate of Duverney, and only demand a comparison between it and my own. The tensor tarsi muscle, on the contrary, is oblong, its fibres parallel, its quadrilateral base is behind, fixed on the lachrymal sac, and its anterior termination bifurcated, so as to suit the situation of the lachrymal ducts, an insertion strikingly con-

terieure de l'orbite, et va s'épanouir et se confondre avec l'orbiculaire au tendon mitoyen du grand angle."—Duverney, *Myologie complete*. Paris, 1746.

\* "L'orbiculaire rejeté, et renversé dessus le nez, on peut en otant bien les graisses trouver un petit muscle qui prend origine de la partie antérieure de l'os planum, et vient s'insérer á la partie interne du tendon mitoyen á l'opposé de celle de l'orbiculaire. Je crois qu'il n'est pas décrit. Il peut servir á diriger l'entrée des larmes dans le sac lachrymal."

trasted with one into the tendon of the orbicularis, which is much in advance of the ducts. Duverney's description, therefore, must also be rejected as inconsistent with my own.

The next pretension is that of Rosenmuller, in the year 1805, and of Signior Alexander Flajani, in 1810. As the latter, according to his own admission, has repeated the description of the former, we will consider him as presenting a full state of the case, and in the following words: "The most interesting part of this figure is the muscle of the lachrymal sac, which arises from the os unguis, and surrounds the internal side of the lachrymal sac, and terminates in that part of it, by which it is united with the tarsi."\*

The unsuitableness of this description to the tensor tarsi muscle, is very obvious. Flajani describes a muscle surrounding the internal side of the lachrymal sac, (that next the nose,) whereas the tensor tarsi lies on the side next the orbit, to which it belongs. This muscle, also, terminates in that part of the sac which unites with the tarsi—whereas the characteristic of mine is to embrace the lachrymal ducts, and to extend to the puncta lachrymalia. Rosenmuller is very far from providing for the latter arrangement—the only intimation of any resemblance to it is expressed in these words: "Dice il Signior Rosenmuller di aver osservato alle volte estendersi alcune fibrille di questo muscolo fino ai canaletti lagrimale." So that Rosenmuller's muscle, far from having the anterior bifurcation, with its fibres embracing the ducts to the puncta, has only *sometimes a few fibres reaching as far as the lachrymal canals*, which implies their stopping very short of the puncta lachrymalia.

Signior Gaetano Flajani, in opposing my claims by those of Duverney and Rosenmuller, has abandoned their descrip-

\* "Il pezzo piu interessante di questa figura e il muscolo del sacco lagrimale, il quale principia dall' osso lagrimale, e circonda la superficie interna dell sacco, e termina in quella parte del sacco nella quale imiscesi con i tarsi."—Giorno medico-chirurgico, vol. 2.

tions, which should have been his text, and very ingeniously adopts one derived from my communication, thereby virtually coming over to my side, but, as he seems to think, sustaining his own. He says, "it is (the tensor tarsi) a fasciculus of parallel fibres, placed in the internal side of the orbit, of a quadrilateral figure, and bifurcated in advance, derives its origin from behind by very short tendinous fibres from the os unguis, at about the distance of one line from its æthmoidal edge—the superior margin is contiguous to that portion of the orbicularis which inserts itself into the internal orbital process of the os frontis. When it has arrived anteriorly at the point of junction of the lachrymal ducts, it adheres there closely, and then divides into two portions, which embrace the said ducts."\*

I will now leave it to the good sense of the profession whether my learned opponent, in adopting this description in place of adhering to his own text, has not changed his colours, and become the advocate of my own claims.

Having thus pointed out the insufficiency of the preceding descriptions the next object of inquiry is, to what do Duverney and Rosenmuller allude when they speak of a muscle at the internal canthus of the eye, and whether there is any other part of the structure to which their descriptions are equally applicable, as to the tensor tarsi muscle. Haller, when speaking of the orbicularis muscle, says "a portion of it, brought from the superior to the inferior place, is continued within its tendon, then beyond the same and beyond the lachrymal sac."†

\* E desso un fascetto di fibre fra lor parallele, posto nella parete interna dell' orbita, di figura quadrilatera e biforcate in avanti : trae il suo principio posteriormente con fibre tenderiose cortissime dall' osso unguis ad una linea circa distanza dal suo bordo etmoidale—il margine superiore e contiguo a quella porzione dell' orbicolare che s'inserisce nell' apofisi orbitale interna del coronale. Anteriormente quando è pervenuto al punto di riunione dei condotti lagrimali vi si attacca fortemente, e quindi dividesi in due porzioni che abbracciano i condotti anzidetti.

† Pars a superiori sede in inferiorem circumducta continuatur, quam interius ligamentum tum trans idem et trans lacrymalem saccum.



Duverney's plate and description suit this process, occasionally growing from the orbicularis, much better than they do the tensor tarsi.

Haller moreover says, concerning the inferior oblique muscle of the eye, that he has seen some of its fibres manifestly inserted into the lachrymal sac, "*cujas aliquas fibras vidi sacco manifesto inseri.*" Sæmmering also reports, that sometimes the inferior oblique muscle arises from the lachrymal sac. Now, as the locality of all these muscles is at the internal canthus of the eye, it is, to say the least, quite as probable from the descriptions of Schobinger, Duverney, and Rosenmuller, that they have been attracted by the orbicularis, and by the inferior oblique, as by the tensor tarsi; for their description, I repeat, it is by no means an adequate one of the latter, in regard to the very essential points of origin, of insertion, of form, of attachments, of situation, and of the course of the fibres. In regard to Schobinger or Duverney, Haller gives no importance to their muscular fibres in conducting the tears. He omits his own anatomical observation, as well as theirs, saying, "unquestionably the tears enter the puncta lachrymalia, are carried into the lachrymal sac, and moreover reach the nose by their own weight.\* But if any doubt remain after this, as to Haller's real views on the subject, it must be dispelled by his saying unequivocally, "a muscle is by some ascribed to this sac, but it is not yet sufficiently ascertained."—Physiology, article 507. Edinburgh translation.

I have now extended this discussion probably as far as the occasion requires, and feel well assured that the proof of Duverney and of Rosenmuller, having anticipated my description, is very defective. Let this be as it may, the more important point is established of there being a muscle at the internal canthus of the eye, hitherto excluded from classical works on anatomy, but henceforth likely to be regularly registered, and appreciated for its influence in con-

\* "*Certe in punctum lacrymale lacryma succedet semelque in saccum cognominem delata porro suo pondere ad nares perget.*"—Elem. Physiol. vol. v.

ducting the tears from the eye to the nose, and for its probably determining certain cases of fistula lachrymalis.

In regard to Signior Trasmondi being the discoverer of the nerves which supply it, he has unquestionably substantiated his pretensions in the discussions between M. Flajani and himself. The particulars are out of my province at present, but for them I refer to his pamphlet, entitled "*Risposta del Dottore Giuseppe Trasmondi Professore D'Anatomia pratica nel Ven. Ospedale della Consolazione al Signior Professore Gaetano Flajani intorno la scoperta Del Muscolo D'Hermer (Horner) e de nuovi due nervi dell' occhio umano.* Roma, 1823."

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ART. VI. *Notes on the Epidemic Fever, as it appeared at Marietta, in the State of Ohio, and its vicinity, in the years 1822 and 1823.* By S. P. HILDRETH, M. D.

THE town of Marietta, where these observations were made, is situated at the confluence of the Muskingum with the Ohio river, in latitude  $39^{\circ} 25'$  north, and longitude  $81^{\circ} 20'$  west. The Muskingum divides the town into two unequal parts—about one-fourth part lying on the lower or west side of the river, and three-fourths on the upper, or east side. The soil on which the town stands is alluvial—and most of the dwellings are erected on the first bottom, which, occasionally, at our highest floods in the winter and spring, is overflowed, although the banks of the river are from thirty-five to forty feet in height. These great elevations of the water are followed, in the summer and autumn, with equal depressions, leaving, in many places, a wide and long beach exposed to the influence of a summer sun. The mouth of the Muskingum is obstructed by a sand-bar, which, when the water is low, is bare to the extent of several acres. This bar is composed of sand, gravel, and broken

shells, dry on the surface, but saturated with water at the depth of eight or ten inches, which, under the heat of a scalding sun, must send forth noxious vapours, or malaria. It was observed in the sickness of 1822, which was wholly confined to the neighbourhood of streams, that those settlements located where the shores of the river were bold, and not lined with a wide beach, were uniformly healthy, and vice versa.

Back of the bottom lands, at the distance of half a mile from the Ohio river, on the east side of the Muskingum, the ground rises abruptly, forty feet, to a spacious plain, composed of sand and gravel, and extending three-fourths of a mile, to the high lands back of the town. On the west or lower side of the Muskingum, the high lands approach much nearer to the river, and there is no intervening plain. The town plat covers all this plain, as well as the bottom lands, and on the plain are erected many dwelling houses. The streets are very wide, and the commons spacious.

The Ohio Company, the enterprising projectors of the first permanent settlement north of the Ohio river, intending this town to be the emporium of the western country, provided liberally for the convenience and comfort of its future inhabitants. The settlement was commenced on the 7th of April, A. D. 1788, by a colony from New England, under the superintendence of General Rufus Putnam, now living amongst us at the advanced age of eighty-six years. Marietta is composed of about one hundred and fifty dwelling houses, and twelve hundred inhabitants. It has been uniformly healthy, indeed remarkably so, from its first settlement, with the exception of the year 1807, at which time intermitting and remitting fevers were extensively epidemic. From that period, the fevers which have occasionally appeared, have been typhoid, though not of the low grade described as characteristic of the typhus fever prevailing for the last few years in the neighbourhood of Middletown, Connecticut, by the authors of the late "Essays on Fevers." They were attended with high excitement, great heat of the skin, and bore evacuating remedies, with affu-



sion of cold water, in almost every case, with unequivocal benefit.

The autumn of 1821 was sickly in the township of Warren, six miles below Marietta, on the Ohio river. The fevers were of the sub-putrid form, lightly marked with the remittent type. Marietta was then healthy.

*Observations on the weather, &c.*—The years 1820 and 1821, were distinguished by unusual drought—the summers hot, and little or no thunder, or heavy winds, to purify the atmosphere. The rivers and streams were low; and in the summer and autumn of 1822 the Ohio river was lower than ever known since the settlement of the country. The water was in most places nearly stagnant, resembling a long lake, more than a river, and covered with a mucous scum or froth. The shores were lined, for several rods in width, with aquatic plants and grass, as early as the month of June, although, in common seasons, they are not seen sooner than August or September, and covered with a green vegetable matter, which, as the waters gradually fell, or the winds forced it on shore, remained on the beach exposed to the sun. These laboratories of putrefaction, together with the stagnant water, exhaled a noxious effluvium, which was noticed by every one, more particularly in the morning and evening—and at all hours of the day by persons living on the high grounds, beyond the reach of the miasm, who came to the banks of the river on business, or to visit their sick friends. In this poisonous gas, no doubt, the seeds of the fever were conveyed, through the medium of the atmosphere, into the system.

The wind, for four months, blew with little or no variation from the south, and the unremitting warmth and aridity, proved wonderfully favourable to the generation and growth of insects, particularly those of the caterpillar tribe. Every wild cherry tree, black and white walnut, with various other trees, were so denuded of their foliage, and so much covered with their nests and webs, as to look quite white. Many other kinds of insects also abounded, and grasshoppers particularly, so indeed as to destroy whole

fields of oats and grass in the course of two or three days. The potato bugs were in such multitudes that a pint could be gathered from one hill, and many pounds were preserved, and used with as much effect as the best cantharides. They are uncommon in this neighbourhood.

Towards autumn the country was overrun with gray squirrels. They travelled in such immense numbers, that whole fields of Indian corn were destroyed, especially in new settlements, bordered with trees. Their line of march was from the north to the south. No obstacles obstructed their course; often passing through, or over the houses of the inhabitants, and swimming the Ohio river in its widest places.

The following spring scarcely a squirrel could be found in the woods—but in the course of the summer, many returned from the south, again crossing the Ohio in their progress northward. It is supposed they were forced in on the settlements from a scarcity of food, there being no nuts or acorns that year.

*Commencement and progress of the Epidemic in 1822.*—In the latter part of June, fevers began to appear on the elevated plain a little removed from the river. They were generally typhoid, attended with symptoms of malignity, such as petechiæ, and glandular swellings, most commonly of the parotid glands. If suppuration followed, the patient generally did well; if not, the disease, in most cases, was fatal. Early in July it was wet and cool, soon after which, the disease put on the remitting character, and began principally to show itself near the Ohio river. Most of the cases in the month of July, in town, were on the “lower point,” or west side of the Muskingum. They were milder than in the following months, and generally recovered.

The following is one of the “Protean” cases. The attack commenced with inflammation on the second joint of the forefinger of the right hand. The inflammation was phlegmonous, and the progress of it the same as in those where the disease fell on the parotid glands. The discharge was glairy and sanious, and the integuments were much dis-

posed to sphacelate. Thence it affected the whole system. Nausea and anxiety, with frequent vomiting of bilious and dark coloured matter, indicated its affinity to the prevailing complaint—and though the subject was an athletic, robust man, such was the extreme prostration of vital and muscular power, that he would immediately faint if placed in an upright posture. It was attended with a continual hiccough, or singultus, and loss of action in the bowels, so that they were greatly distended with flatus. The pulse was low and very weak.

By the aid of calomel, in doses of thirty-five or forty grains, and repeated every twenty-four or forty-eight hours, the bowels were kept open. Blisters were applied to the stomach and extremities, with a very free use of laudanum, wine and brandy. The ulcer was dressed with dossils of lint wet with a tincture of myrrh and spirits of turpentine. Under this course, at the expiration of three weeks, he so far recovered as to be able to walk about the house, but was troubled with an intermittent, occasionally, till late in the following autumn.

By the first of August, the fever made its appearance on the “upper point,” or east side of the Muskingum river, and did not become very prevalent, till the last of the month. The greatest number were ill in the month of September. Cases were uniformly multiplied by the occurrence of cool nights. There was at one time sick within the compass of a square mile, four hundred, out of a population of twelve hundred persons. These cases were composed of the mildest intermittents, and intermediate grades, up to the genuine yellow fever. From the first of July to the last of November, I had under my care about six hundred cases of more or less severity. The proportion of deaths was about six in a hundred, where proper medical attention was paid. All other disorders gave way at the approach of the epidemic, or were forced to assume its livery. The epidemic did not sensibly abate until the heavy frosts of November.

*Symptoms of the Fever.*—More or less indisposition was felt for two or three days before the actual attack ; such as



weariness, general debility, loss of appetite and unquiet sleep. These premonitory symptoms were commonly followed with a sense of chilliness, or a complete rigor—then fever, with pain in the head, usually over the eyes, back, loins and joints. The fever in many instances continuing without intermission for forty-eight or seventy-two hours, though generally there was an intermission in eighteen or twenty-four hours. The more distinct this remission, and especially when accompanied with free perspiration, the more favourable; and conversely. The tongue was in most cases lightly coated, and if the edges were clear and moist, it proved favourable. Coated heavily, to the very edges, and dry and brown, it indicated unfavourably. Great and continual nausea, with anxiety and distress about the precordia, and incessant vomiting of the food and drinks, were very bad symptoms. Not a few were much distressed in this way, and some vomited dark coloured matter, mixed with mucus, resembling coffee grounds. Deep sighing was also a common and bad sign. These cases were mostly fatal, though some recovered. The eyes and skin in many instances became yellow; in some, a saffron colour. Its approach was gradual; first appearing in the eyes, then about the forehead and neck, and thence over the whole body. It was usually associated with a listless, lethargic feeling, in many ending in complete coma and death. The bowels were generally easily moved, and the discharges were highly bilious, from a dark green to brown, or a complete black. The urine dark, and highly charged with bile. The extremities were generally cold, and required the constant attention of the nurses to keep them warm. Not many of the cases, in the autumnal months, were attended with petechiæ, but where they did appear, death usually followed. Diarrhœa was not common, except when produced by an improper use of cathartic or emetic medicines; and where not immediately checked, such a total prostration of the powers of life followed, that it proved fatal.

All ages were attacked by this disease, from the infant at the breast to the old and decrepid. But to children it was

rarely mortal. Women in pregnancy were as often attacked as others, and if a miscarriage took place, death was almost uniformly the consequence. The fatal terminations of the disease, were mostly on the fourth, seventh, and ninth—though some died as late as the eleventh, fourteenth, and twenty-first days. There were several well authenticated cases of dogs being attacked with regular paroxysms of chill, or a shake, followed with fever and thirst, and returning at regular intervals.

*Treatment.*—As the stomach was more or less loaded with bile, an emetic was usually directed as the first measure, unless contraindicated by a great prostration of strength, or an excessive natural vomiting, with great uneasiness, distress and heat in the epigastric region. In such cases emetics were dangerous, as they sometimes produced such an irritable state of the stomach that no remedy could allay it. Mild cathartics were, under such circumstances, substituted, though if great debility existed, no evacuants were used except mild enemata, and recourse was immediately had to wine, brandy, bark, &c. with a free application of blisters to the stomach and extremities, until the system had so far recovered its tone as to bear purgatives. In the cold stage, and debility preceding it, free use was made of capsicum, spirits, and pearlash, applied hot with a flannel cloth to the extremities—and in many cases of great gastric irritation, this application was the main dependence for raising the pulse and restoring excitability.

In the malignant forms of the disease, so much resembling the yellow fever of our maritime cities, we relied chiefly on mercury. This was given in small doses every three or four hours, where the stomach would bear it, and assisted in its operation on the lymphatic system by free inunction with mercurial ointment, until the gums and mouth were affected, and a moderate salivation kept up until the dangerous symptoms abated: in every instance where the mouth was early affected, the patient recovered. It allayed the gastric irritation, thereby enabling the sick to take other suitable remedies, and promoted a crisis. In other malig-

nant cases, where the stomach was not so irritable, charcoal, in fine powder, mixed with yest, was given with the most decided benefit. I recollect several cases where it put a total stop to the progress of the fever. The fever becoming intermittent, charcoal mixed with bark, was very useful. The milder cases of remittents and intermittents were easily managed with bark, snakeroot, &c. given in the intervals of the paroxysms. Cold water was found very useful as a drink, and also as an outward application—removing restlessness, and reducing the heat of the surface to the sweating point, thereby shortening the paroxysms by many hours.

Early in November cold weather commenced, and put a stop to the epidemic. But intermittents were common through the winter, and in the vernal months of the year 1823, assuming usually the tertian type. By occasional blood-letting, and the use of the prussiate of iron, they were easily removed, though any slight indiscretion would occasion a relapse. The fore part of the winter of 1822-3 was very wet, but on the whole it was a mild season. The inhabitants were generally healthy. The spring months of 1823 were pleasant, with every prospect of a salubrious summer. But our calculations were sadly disappointed. The sickness commenced anew in June, and pervaded nearly all parts of the country. It was not, as in 1822, confined to the vicinity of water courses, but infested the uplands as well as the valleys. Even some districts in the Allegheny mountains were visited with intermittent and remittent fevers. The whole country was deluged with rain through the months of June and July,\* with very little thunder and lightning, and no heavy winds. The wide bottoms on the Ohio, and all the tributary streams were filled with water, wherever there was a low or sunken spot to hold it. Many acres of Indian corn were entirely ruined by the excessive

\* The only part of the State, east of the Sciota river, that remained healthy, was a district of country embracing "New Connecticut," and extending in that direction from Lake Erie to the Ohio river, where it was very dry, and the inhabitants entirely escaped fevers.



wet, and many fields of wheat lost after having been through the hands of the reaper. Grass suffered in the same way. The low lands exhaled noxious and fœtid effluvia, so potent in many places that the passengers were obliged to put their hands to their noses, and make all haste through these disgusting spots. In passing from the high lands to the bottoms, these fœtid effluvia could be smelled for some distance among the hills, especially if the wind blew moderately in that direction. Even the flat lands on the heights, if covered with a growth of grass, exhaled the same vapour. I have been told by several intelligent farmers, that in ploughing amongst their corn in the rich bottoms, the earth, instead of that grateful odour which usually arises from fresh ploughed land, sent forth a disgusting, sickly smell. The whole surface of the ground seemed to be in a putrid state, from the want of a sufficiency of sunshine to dry and sweeten it.

The last of August the rains ceased, and the weather was dry the rest of the season: but the systems of the inhabitants had become so charged with miasmata, that the change of weather had no influence on the progress of the epidemic. In the months of September and October, dysenteries were very prevalent—and in many instances, alternating with intermitting fever in the same subject. Many of these cases proved mortal—as the dysentery did not appear until the subject was much reduced by the previous fever. In some parts of the country, on higher lands, the dysentery appeared as an idiopathic disease. The fever was of the same type as that of 1822, but bore evacuating medicines much better; so much so, that in the summer months, venesection was used with decided advantage. In proportion to the numbers attacked, the disease was much more malignant and fatal in the country than in the town; especially amongst those living in the wide and rich bottom lands. This was doubtless occasioned by the greater quantity of stagnant water about them, and the luxuriant growth of weeds which overran the farms, from want of hands to till them; thereby obstructing the free circulation of the

air, and by their decay filling it with poisonous vapours. Never did the eye behold such an enormous growth of weeds as had taken possession of the rich lands, rising in many places to the height of fifteen or eighteen feet. "The earth brought forth by handfulls," in every place not drowned by water. The orchards were filled with fruits, and the forests with all kinds of nuts and acorns. The fields were loaded with grain; and in spite of the weeds, the Indian corn reared aloft its spiry head, and produced an abundant crop, in many instances without any aid from man, other than once ploughing. Had there not been the kind hand of Providence in this, famine must have followed the sickness, for there were not well people enough to take care of the sick, much less to attend to the cultivation of their farms.

The course of treatment varied but little from that of last year. The cases with malignant symptoms, and especially with great gastric irritation, were put under the mercurial impression, with the most unequivocal advantage. Those with signs of putridity, were treated with pulverised charcoal, yest, and wine—and if attended with much heat, the affusion of cold water was added. The remitting and intermitting forms were managed with bark, prussiate of iron, tartrite of antimony, &c. Many cases were cured at once, by giving an ounce of bark a few hours before the expected cold stage. The dysenteric form of fever, was managed by repeated cathartics of castor oil, calomel, or neutral salts, followed with prussiate of iron, or acetate of lead; and generally with success, if application for assistance was made before the strength was much wasted. But the sick often trusted too much to their own skill, and to the powers of nature; and a part of the time, from the great number affected, and the illness of the physicians, numbers were deprived altogether of medical advice, or were only visited once or twice in the course of their sickness. From these causes, many lives were lost, that, with regular attention, might have been saved.

Instead of the usual storms of rain incident to the

equinox, the wind was from the north, the weather fair and cool, and the nights of the 20th, 21st, and 22d of September were visited with a smart white frost, sufficient to produce ice of the thickness of window glass. This had no effect in checking the epidemic: the attacks, on the contrary, were more frequent after this cool weather, and not less malignant. The disease continued to rage through the month of October, and was only suppressed by the heavy frosts in the beginning of November. After this, no case of continued fever appeared; but mild intermittents, and a few cases of dysentery, still loitered amongst us, as if loath to quit the territory over which they had so long reigned. In November, many cases of rheumatic affection appeared, often combined with tertian intermittents. They were readily removed, by a free use of bark and snakeroot. Nearly all who escaped the fever in 1822, were attacked with it in 1823; while very few of those severely attacked last year, suffered with the fever of this year; or if attacked at all, it was with intermittents.

The worst forms of the fever could not, in any instance, be thought contagious. Nurses, it is true, sickened and died of the same fever as the person on whom they had been attending: but then they had been living in the same atmosphere, and exposed to the same causes of disease, in addition to the labour and fatigue which they underwent. It was noticed, in 1822, that almost every person living in the high lands, who spent a night with their sick friends on the river bank, invariably took the fever: but they did not communicate the disease to their friends living in the pure air of the country, in any instance, that has come to my knowledge.

As to the origin of the fever, various conjectures were raised by the people. Some would have it, that the *steamboats* had brought it up from *New Orleans*; others, that the *southerly winds* wafted it from *Natches*, and, like some of our good citizens on the sea-board, were more fond of attributing the sickness to "*importation from abroad*," than to "*domestic origin*." However, the opinion of those who would take the



trouble of thinking at all on the subject was, that the fever of 1822 had its origin from the sand-bars and beaches of the Ohio river, laid bare by the great drought of that year; and that of 1823, from the standing water, and low wet places in the bottoms, gradually becoming dry, and exhaling their poisonous vapours.

In closing these desultory remarks, I have only further to observe, that so universally predominant was the influence of the epidemic, that every other disease was swallowed up in its vortex. Even a long standing case of epilepsy, in a boy fifteen years of age, was conquered by the fits of a quotidian ague. His father informed me that the epileptic fits left him, after he had been attacked with the ague about a week, and that he had been free of them about two months—the ague still continuing occasionally. The boy had previously used, for two years, all the most approved remedies for epilepsy, without any benefit.

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ART. VII. *Thoughts on the Causes, Phenomena, and Laws of Epidemics, with suggestions for their prevention and suppression.* By N. CHAPMAN, M. D.

(Continued from No. 16.)

IN the last number of this Journal, I closed my remarks on the nature and laws of marsh miasmata, and indicated the ordinary diseases of which they are supposed to be the cause. Connected with this inquiry, is the deeply interesting question of the origin of *Yellow Fever*, which I now propose to discuss more elaborately.

Copious as are the materials, it is not my intention to occupy much space in delivering the history of this disease. No portion of our medical literature is more ample, or better known, than that which treats of this subject—and to the various writings in relation to it, particularly those of Rush, Hosack, Miller, Pascalis, Caldwell, Irwin, Jackson, Warring, &c. I beg leave to refer for details.

The yellow fever may be considered as an endemic of tropical climates. It seems occasionally to have occurred in more temperate regions, and we have pretty authentic intelligence of its visiting the United States in early times. But it was in the memorable year of 1793, that, by the wideness of its prevalence, and the extent of its devastations, it attracted general attention, and commanded a most serious examination.

Notwithstanding, however, the ample discussions which it has received, from some of the ablest men whom our profession claims, there is hardly one point connected with it, accurately determined. Its origin, nature, and treatment, are, indeed, nearly as much matters of controversy, at the present moment, as when this pestilence formidably broke out among us. The bitter, and, I might add, the disreputable altercations formerly provoked by the subject, are now, so far as regards this city, at an end, and shall not be revived by me. Yet, it is my wish to offer some of the views which I entertain of this most interesting disease—and, in doing so, I shall be unavoidably compelled to pass over a part of the debateable ground.

The main question, which challenges investigation, relates to the origin or production of the disease—and here, I cannot help thinking, the dispute is one, very much of definition. The disease, in my opinion, may originate either in a foreign or domestic source. But while I concede, so far, to the doctrine of importation, I do not hold, that the fever itself, in a ready formed state, is brought to us, or, under any circumstances, by fomites or otherwise, is susceptible of transmission from one place to another, however short the intermediate distance. My conviction is, that vessels from certain climates, in a foul condition, may and do occasionally supply the materials out of which the disease is generated. To this point the evidence is most satisfactory and conclusive.

That in this city, it has proceeded, directly or indirectly, from vessels, is perhaps admitted. In 1793, it was very generally ascribed to a cargo of rotten coffee thrown on a

wharf:\* and it is equally confessed to have been traced, on subsequent occasions, in 1797, to two ships from Marseilles and Hamburgh—and in 1798, to one from the West Indies.† By extending the inquiry, we shall find, that such is also the fact, in relation to other places. As the least equivocal, I select the occurrence of the fever at Amboy, in 1811, and at Boston in 1818, in both of which instances, the point seems conceded.‡

Nor is the mode in which it happens at all obscure. In preparing a vessel for sea, her hold, or space in which the cargo is contained, is hermetically sealed, by the tarpaulins or coverings of the hatches, so that water can neither penetrate from without, nor the air within escape. It hence follows, that such vessel might arrive from an infected port, with a portion of atmosphere originally distempered, or which was vitiated in the progress of the passage by the putrefaction of some of the cargo, or by other causes. Cases are recorded of the fever having been thus generated even by dirty ballast, or where the hold has been uncleansed after a long voyage, and sometimes in new vessels built of unseasoned timber. Green wood, whether for fuel or otherwise, is found, when exposed to moisture, in a hot stagnant atmosphere, to eliminate a miasm of the most malignant character. The air, enclosed as above, is condensed by the coolness of the bottom of the vessel, from the sea surrounding it, and becomes precipitated, and ultimately, perhaps, confined in the interstice between the external and internal planking of the timbers or frame work.

Why a vessel in this state should arrive with a healthy crew is no longer unintelligible, since they are not at all exposed. But, on breaking bulk, or entirely emptying of the cargo, the air previously shut up, is disengaged, and such persons as may be subjected to it are attacked. Examples of the fever breaking out, under these precise circumstances, are very familiar, and might be readily cited.

Equally, however, do I maintain, that the same de-

\* Rush, vol. iv. p. 4.

† Ibid, vol. 4. p. 67.

‡ Hosack's Register.



scription of miasms may be evolved by the putrefaction of domestic filth, in certain positions, and prove the cause of similar effects. Not tediously to dwell on a point, which I deem to be sufficiently established, I shall be content to submit the most striking of the evidence. That the fever in this city in 1805, and its immediate recurrences here, and in Baltimore, and New York, together with the instances already cited, was of domestic origin, is to me indisputable—and is hardly denied, even by those who are devoted to an opposite doctrine. No foreign source has, at least, been pointed out, though the most vigilant attention, and persevering researches, have been given to the subject.

Whether exhalations from filth, local or imported, will be productive of this fever, under all circumstances, remains to be determined. The hypothesis, however, which alleges the necessity of a certain constitution of atmosphere, as an auxiliary agent, is strongly sustained by the fact, independently of other considerations, of the disease occurring at irregular periods. In what such a state of atmosphere consists, or by what precise means it is produced, we are not exactly acquainted. It is said, and not without probability, that a certain degree of temperature, steadily preserved, effects it. The strong case formerly noticed, is appealed to, "that every season in which we have had the fever, since 1793, a thermometrical register, accurately kept, shows the average heat during the months of June and July, to have been 79° of Fahrenheit—and conversely, that in the intermediate seasons, when we escaped, the weather was considerably cooler."

Yet to this combined influence, something more, it would appear, is required to occasion yellow fever. Whatever may be the extent of vegetable putrefaction, removed beyond the watery margin of a city, we have no reason to believe that it is adequate to such an effect. Disease it will very often excite, though not this precise fever. These views, which I suspect are in part original to myself, rest on a very solid foundation. Thus, the fever has been invaria-

bly found in this narrow position. There is no proof, so far as I know, on which we can rely, of its prevailing any where else, though undoubtedly the contrary is affirmed. Could mere masses of putrefaction produce it, we should have it throughout the country, where indeed they exist more abundantly. The filth of our cities proves inoperative to this effect, except in this particular situation. It is related by Dr. Rush, that of forty scavengers employed in cleaning the streets in 1793, only one took the disease. Nor have we since found that either this class of persons, or the carters who haul away the filth, or the farmers who take it to the country and spread it over their fields, are more liable to the disease. Even when accumulated in piles, covering acres of ground at the edge of the city, though emitting in warm weather a detestable stench, it has done no harm. Every variety of ordure produced by our great population—the contents of privies, the cleansings of the streets, the offals of numerous manufactories, the depositions of the common sewers, as well as of all other receptacles of foul matter, is exposed, in the mode I have stated. During the summer of 1820, I had frequent occasion to pass by one of these immense hot-beds of vegeto-animal putrefaction, and while assailed by the offensive odour from it, I was struck with the want of connection between our pestilence and such a source.\*

The fever has, moreover, invariably appeared along the wharves, and rarely extended itself far into the city, or beyond the influence of this position. It is the opinion of one of the most experienced of our practitioners, and who, in every respect, is deserving of the highest confidence, that excepting the year 1798, Fourth street, which is little above a third of the width of the city, has been the limits of atmospheric distemperature.

\* The deposit of filth to which I allude lay near Centre Square, and it was on my route to the Schuylkill Yellow Fever Hospital, which I attended, that I became exposed to the effluvia. But at all times, such accumulations exist, and are periodically divided into lots, and sold to the farmers for manure.

The following report of the relative proportion of deaths, in the different streets, in the year 1793, is confirmatory of the opinion.

Deaths in Water street, within the limits of the city,	187
in Front street, - - - - -	220
in Second street, - - - - -	212
in Third street, - - - - -	125
in Fourth street, - - - - -	10
in Fifth street, - - - - -	60
in Sixth street, - - - - -	28
in Seventh street, - - - - -	10
in Eighth street, - - - - -	21
in Ninth street, - - - - -	4

The disease, elsewhere, is restricted in the same way to the immediate vicinity of waters. We are told by Count Humboldt, that in South America it is “confined to the shore, either because those persons who bring the disease disembark there, or goods supposed to be impregnated with deleterious miasmata, are there accumulated—or because on the sea side gaseous emanations of a particular nature are formed.”\*

Exactly the same thing happens with regard to the whole of the West India Islands—the disease uniformly occurring in the maritime towns, according to the reports of the best writers on the subject. The only exception, indeed, to this very general rule, is to be found in Spain, where it is represented occasionally to have prevailed in some of the interior cities. But whether such really be the fact, or the disease was the ordinary typhous fever of Europe, my information, at present, is too indefinite to determine positively. In relation to our own country, similar statements have been made, and though I am not disposed utterly to deny them, I must say that such as I have met with, seem to me to be very imperfectly authenticated.† Yet it is not improbable

\* Vide Personal Narrative, vol. iii. 397.

† Certain it is, that the cases so often referred to in this discussion, as occurring on the Mississippi, on the authority of Mr. Ellicott, were denied



that on the borders of our vast lakes, or of those rivers which pervade the interior, there may be a condition of things approaching so nearly to that of our sea ports as to be productive of like results. Even admitting the fact, I do not perceive that the opinion I have advanced is materially affected—as in such positions, we have still the influence of water, which I deem so essential in the production of the fever.

The nature of the cause which modifies exhalations in this position, so as to generate pestilential fever, is wrapt in obscurity. It seems, however, that it is something assimilating filth to the condition in which it exists in vessels, and by virtue of this, it is productive of analogous effects. Every one must be aware, who is accustomed to frequent wharves, in hot weather, how very similar is the prevalent odour to that of a dirty vessel. It may, perhaps, be owing, though this is mere conjecture, to the combined influence of the air from the water—of the moistness of the filth—and the closeness of this compactly built part of cities : in all which respects, there is some similitude to the state of a vessel.

It follows, from the tenor of my reasoning, that I consider the disease under review, as the offspring of peculiar effluvia, escaping from matters in a state of putrefaction, either of a foreign or domestic source, aided by some occult agency, which has hitherto eluded our researches. Nor does it appear, from all I have been able to collect, that, to the production of the disease, any very large collection of putrifying matter is demanded. On the contrary, there is reason to suspect, that the poisonous exhalation is sometimes emitted from masses so minute, as often to elude observation and detection. By adverting to the fact, of the diffusion, permanency, and intensity of the odour which is thrown out by musk, and many other articles, we can readily conceive, that pestilential effluvia might escape from a source, which would not be very readily visible, though efficient and operative.

as being genuine yellow fever by that gentleman himself.—*Hosack's Discourse on Medical Police,*

It is known, that such fevers do arise, in situations where, apparently, none of the materials of miasmata exist. I have seen yellow fever break out in this city, and the same has been remarked in other places, on the neatest of our wharves, avoiding, as it were, the foul and the dirty. By these facts, have we hitherto been exceedingly embarrassed—leading some to the conviction of the direct importation of the disease, and others to impute its origin to the influence of intense heat only. But, rejecting my former hypothesis, perhaps they may be explained on the supposition, that while the surface is dry and clean, there are accumulations below, from which are emitted, through the crevices induced by droughts or otherwise, a poisonous miasm.

What lends no slender support to the conjecture, is the well known and now acknowledged occurrence, of miasmatic diseases under such circumstances, and which is conspicuously illustrated in the United States. It may moreover be affirmed, and as having a close bearing on the point, that the fever has generally appeared, and raged to the greatest extent, in new made grounds in the construction of wharves, consisting mainly of the filth of the streets, and the argillaceous soil of cellars.

As to the origin of this disease, all, however, which I have said, is denied—and contagion made the immediate and only cause of it. By contagion, I presume is meant, (since such is the only correct theory of contagion,) a virus generated in the system of one individual, by vitiated vascular action, which imparts the disease to a second, and so multiplies itself indefinitely. That this latter is wholly an erroneous view, conferring on the disease a property it does not possess, is manifest to my mind.

Without descending into a minute, or lengthened argument, on a point, which has been so fully and ably discussed, in writings of easy access, I shall only adduce, in refutation of the opinion, the few following considerations :

1st, That the fever is sometimes an epidemic, in its nature, laws and effects, as is evinced by the sovereignty which it exercises over inferior diseases. Let me here be under-

stood. The disease may prevail, either as a general or partial epidemic. When it first made its appearance among us, it was of the former, and recently has been of the latter character. It would seem, from 1793 to 1805, there was an universal distemperature of the atmosphere, pervading the sea-board of this immense continent—and annually the fever broke out in several of our cities, attended by all the manifestations of a wide spread morbid influence. But, subsequently, it has occurred, without such accompaniments, apparently dependent on local causes, with a less tendency to diffuse itself. The history of its several visitations, will be found very clearly to illustrate the truth of the observation, and the necessity of the distinction.

2d, That the disease, in no instance well attested, ever spread, when removed beyond the sphere of the city. What can be more decisive than the experience, in this respect, as afforded by the hospitals appropriated to this fever? Though crowded to repletion with patients, for a succession of seasons, in all stages of the disease—though the medical men, the nurses, and other attendants, were constantly exposed, in the discharge of their respective offices, to effluvia in the most concentrated state, from the living as well as the dead, the whole have uniformly escaped. In the administration of remedies it is not uncommon for nurses to have the black vomit cast on them: they remove the discharges, as well the fæces as the urine—they inhale the breath and the perspiratory fætor from the body of the sick—they lay out the corpse, and wash the clothes of the person and of the bed. Examinations, *post mortem*, have been carried on to a great extent, in the most confined and ill ventilated situations, and as a sort of *experimentum crucis*, inoculations with the black vomit, and other matters from the stomach, and also with the saliva and serum of the patient, have been repeatedly practised—the vapour from the black vomit, previously heated, has been breathed, and even two ounces of the same fluid swallowed at a time, and without any serious effect, in any one instance of these exposures, having been experienced.\*

\* Bancroft, page 291.



3d, That the disease has been invariably suppressed, on the accession of cold weather, and in this particular differs essentially from all contagious, and strictly conforms to miasmatic, fevers.

As to the truth of this assertion, there can be no difference of sentiment. It is universally acknowledged that cold is more favourable to the extension of contagious diseases—and the reason is obviously to be sought in the freer ventilation during warm weather, or in the volatilization and dispersion of the matter of contagion. Thus, we uniformly find typhus, which depends on contagion, to spread more rapidly in winter—whereas yellow fever, having its origin in miasmatic influence, is at once checked by cold, and often by heavy rains, and similar agencies.

4th, That the sphere within which contagion operates, is so exceedingly narrow, that the disease, except in a very few cases, cannot be contracted by it. Experiments, which now claim very general confidence, show that the limits of the contagion of typhous fever, as well as small pox, do not exceed from six to ten feet.\* It has been proved that persons placed beyond this distance, in the same or an adjacent apartment, escape an attack†—and the same holds with regard to plague, and perhaps all other contagious disorders. The yellow fever, on the contrary, has in numberless instances, been acquired without any intercourse with, or proximity to the sick, by passing through an infected district—entering no house, or approaching nearer than the street, the alleged source of the contagion. During the prevalence of the fever the last season, in this city, several persons took it in this way—and there were more than one instance in which it was contracted by looking over the fences, (in the gratification of an idle curiosity,) which were put up to exclude communication with such parts of the city. Even the line of demarcation may be drawn with tolerable precision, indicating the limits of danger, except when the poisoned air may be wafted over it by the force of winds

\* Chisholm.

† Haygarth's Letter to Pericrre Chisholm.

setting in such direction.\* Can there be much stronger evidence of the disease being dependant on an impure atmosphere, and not on contagion?

5th, That the disease neither originates nor spreads as proceeding from contagion. Though in some instances it has broken out at a single point, and regularly radiated, it as frequently appears simultaneously in different positions, remotely separated, and is never propagated from the sick, removed from the infected district. Nor is its rapid and general diffusion less reconcilable with such an hypothesis. Diseases confessedly contagious, are slow and desultory in their progress, occurring in one family, and then in another, without regard to localities, and readily to be traced to some exposure. As an example, let us take the case of small pox, between which and yellow fever, how striking is the dissimilarity in each of these respects!

6th, No question, and especially one of medical science, can or ought to be decided by mere authority. But where there is an immense preponderance of opinion, and that too of the enlightened and experienced, it surely is not to be disregarded in discussions of this nature. Did our cause require such support, an appeal might be confidently made to probably nine-tenths of the profession, who have had opportunities of becoming conversant with the disease, in our favour. By Dr. Chervin, who, in pursuance of an appointment from the French government to collect information on this subject, with a view to the regulation of their quarantine system, visited the whole of the West Indies, the coast of South America, and the United States, I was told, when on a visit to this city, that out of five hundred and sixty-seven written opinions which he had received, there were only twenty-eight on the side of contagion. That this is a fair proportion I have every reason to believe. As regards the West Indies, such is the statement of Fergusson,

\* The spread of the fever I have always found to be in the direction of the winds.

one of the most authoritative of our writers, and is unquestionably true in relation to the United States.\*

"At first, every new comer, whether medical or otherwise, had his fears—or I should rather say, had the firmest belief in contagion: but with none did that prejudice ever remain beyond the year. It vanished infallibly as soon as he saw and had experience of the disease—and I can declare that during the latter years of our sojourn there, with hundreds of cases daily before our eyes, mixed in every conceivable way with the surgical, the convalescent and the healthy,† I never even heard the idea started, nor do I recollect a single precaution, advice, or observation that acknowledged the existence of contagion, ever being directed to the medical staff of the army from any quarter. I appeal to the writings of Dr. McLean, the living evidence of Mr. Weir, Dr. Jackson, Drs. Theodore, Gordon, Borland, Inspector

\* By Dr Chervin I was told that in New Orleans he found only two medical men, and these foreigners, contagionists—in Savannah, Charleston, Norfolk, Richmond, Alexandria, Baltimore, none—and in Philadelphia and New York, two or three in each city only—in Boston, and the other eastern towns, not a single one, so far as his inquiries had, at that time, extended. When it is recollected that these cities must comprehend from five hundred to a thousand physicians, it will appear that there is as decided a preponderance of authority as ever existed, or can be expected, on any disputed point whatever.

To this, however, it may probably again be replied, that the medical board appointed by the British government, and the commissioners sent by that of France into Spain to determine the point, have decided otherwise. But, in common with thousands of the profession, I object to the competency of those tribunals, and respect their award as little as I would that of the "Holy Alliance" on the merits of liberal institutions. The evidence on which they decided is before the world, and on it alone may they be convicted of error, and their decision reversed. On such a point the opinions of men thoroughly conversant with the disease, from actual experience, are only entitled to respect.

† This was often inevitable from the want of hospital accommodation. In the 67th regiment, of which I was surgeon, and which for nearly three years never sent a man away from the regiment to general hospital, I had only one large ward for the whole, without separations or partitions of any kind; and when severe ardent yellow fevers, as they often did, nearly filled the hospital, the punished, the ulcerated, the wounded, and the convalescent, were obliged to retain or take a bed wherever a vacancy occurred."



Warren, and all the medical officers who served there, to bear me out in this assertion. I appeal to the evidence of every medical officer now serving in the West Indies, that has ever had experience of the disease, (for there may very probably be found contagionists among those who never saw it,) to say whether in their lives they ever met with a case of yellow fever that could with greater feasibility be traced to a personal communication with a subject labouring under the disease, than to the ordinary natural causes from which it has been proved to originate.”\*

These are the chief arguments against the hypothesis I am combating, and which might be very much strengthened by further amplification. But, on the other side, there are some facts and reasonings, that, in a fair discussion of the subject, should not be omitted, though I do not perceive their force. It is alleged, that while, generally, the fever is not contagious, it does under certain circumstances prove so—as in small, crowded, and ill ventilated situations. This peculiar condition of things constitutes the soil, to use the figurative language adopted on the occasion, suited to the germination and development of the disease. Cast in another and different position, the seeds of the malady are supposed to wither and decay, without ever quickening into action or life. Analogies of this sort, however well they serve the purpose of illustration, afford no argument or grounds of correct reasoning. The question has, and may again be put, where are the proofs of the disease having been so propagated? Diligent as have been the researches of the contagionists, they are not able to adduce more than five or six facts to this purport, and these are exceedingly equivocal. It so happens, too, that all the cases cited in evidence, did actually occur in the country, where, it is conceded, that this property is least apt to attach to the fever.†

\* Transactions of Med. Chirurg. Society, vol. viii.

† Great reliance has, in particular, been placed on some cases reported by the late Dr. Wistar to the College of Physicians of this city, and by them published, which I am satisfied, from evidence in my possession, deserve no attention—and such would probably be the fate of all the rest, were they strictly scrutinized.

Nor ought it to be forgotten, that, in another respect, these reports, (like the ghost of Hamlet's father,) come to us in a very "questionable shape." They proceed in nearly every instance from practitioners very little familiar, or perhaps utterly unacquainted, with the disease—who hence may have mistaken for it, malignant forms of the ordinary autumnal fevers. It is indeed to be recollected, that according to the prevalent doctrine of the time, the only difference admitted in the two diseases, regarded the degree of violence, and consequently, every very bad case of fever was considered as one of the epidemic—than which no greater error exists in pathology.

In considering this point, though I may be led into a digression, I cannot, from its importance, consent to pass over it without a slight notice. To arrive at a just conclusion, we must previously understand, what is the import of the term *specific*, in its application to disease. It is not my design to inquire how far diseases are susceptible of division, like the objects of natural science, or, in any way, to touch nosology. In using the term *specific*, as well technically as in common parlance, we mean only, that, while a disease bears a resemblance to some kindred affections, it has certain peculiar, uniform symptoms, which serve to distinguish it. Taken in this sense, we must be compelled to admit the proposition, of a distinction in the two diseases. They differ most materially, in many respects, as we shall presently see.

1st, Though each arises from a miasm, this may differ in kind, as well as degree. It is, indeed, hardly to be conceived how much the results of vegetable putrefaction vary under different circumstances, as has been shown in my preceding essay. To produce yellow fever, a specific miasm is required, and hence we find the disease only in particular positions, and at certain times, while common bilious fever is incident to many climates, and may prevail at all seasons, to a greater or less extent.

2d, The two diseases have not the same type or symptoms. The yellow fever, if it can be considered as fever at

all, is a *continent* fever, having a single paroxysm—whereas, the bilious is a remittent, or in its most continued form, is marked *diurnally* by sensible remissions and exacerbations. Concerning the differences in the symptoms, it may be summarily stated, that they are found in the pulse, the tongue, the skin, the respiration, the discharges, as well from the stomach as the bowels—in the condition of the secreting power of the liver, in that of the muscular and nervous systems, in the countenance, and especially in the expression of the eye, which is so peculiar, that the disease may generally be recognized by one conversant with it, by merely contemplating the physiognomy of the patient.

3d, The yellow fever has, as is noticed by Warren, one of the earliest writers on the subject, its “*seat and throne*” in the stomach. The bilious fever, on the contrary, though it may have a gastric origin, seizes mainly the hepatic apparatus.

4th, The convalescence from yellow fever is rapid and complete. That from bilious fever, slow and lingering, and liable to relapses, leaving behind it more or less visceral derangement.

5th, The yellow fever, as is now established, destroys or diminishes the susceptibility to future attacks—while the bilious fever never fails to increase it.

6th, The two diseases are not relieved by similar modes of treatment. That which is so successfully applied to bilious fever, experience teaches has totally failed in yellow fever.

What, however, may be held as conclusive of a distinction between these cases, is the notorious and acknowledged fact, that while the one ravages our cities, the other, at the same time, prevails in the circumjacent country. Examples to this purport, are abundantly afforded. We have seen such on every occasion of the occurrence of our summer pestilence. While the wharves, and their immediate vicinage, shall be devastated by yellow fever, the other districts of the city, and the neighbouring country, become the prey of bilious fever, in its several modifications. Exactly



the same has been remarked in the West India Islands, and along the extended coast of the southern continent.\* It is, however, still more strikingly illustrated in our southern states, and especially in South Carolina, where, indeed, it is so much the case, that the inhabitants of Charleston seek a shelter in the city, even when yellow fever prevails, against which they are *seasoned*, on the first appearance of what is emphatically denominated the *country* or bilious fever. This is a most important fact, in the controversy, and even if it stood alone, would be nearly decisive.

Did, finally, an identity exist in the two diseases, except as to violence only, then a mitigated form of yellow fever would constitute bilious fever—and conversely. But so far as I have been able to determine, and in this, I think, I am amply supported by authority, these fevers, throughout their several gradations, retain, without ambiguity, their distinctive characteristics. The mildest case of yellow fever is as clearly designated, as the most vehement and malignant. But allowing the alleged facts to the contrary, to what do they amount. Can they be made to prove more than that this fever, now and then, casually acquires the property of contagion? And are we to look to an agency of this sort, so purely accidental in its occurrence, and so circumscribed in its influence, as the cause of a pestilence, in many instances of such rapid and wide spread prevalence?

Contagious diseases are so at all times, and under every condition of circumstances. It is a permanent attribute, which is insusceptible of increase or diminution, except by the concentration of the virus. The variolous, and other complaints of this character, are taken, though not to the same extent, whether in a confined or open apartment, in a high, as well as a low degree of temperature, and in every variety and modification of weather.

No agreement exists, among the advocates of the hypothesis, as to the mode in which this disease, acknowledged,

\* Baron Humboldt.

in its general character, to be otherwise, becomes contagious—or how, in other words, a vitiated atmosphere operates in the case. By some, as Chisholm, it is said, that it merely increases susceptibility to the impression of the virus, already received into the system, and at the same time enhances the action, giving to the fever a more aggravated and malignant shape. Denying it has the former effect, Professor Hosack maintains, that it produces some “chemical combination with the virus secreted from the diseased body, and that, thereby, the contagion becomes more or less extensively multiplied, according to the extent and virulence of such vitiated atmosphere.” The idea of a *tertium quid* being formed in the operation, he expressly disclaims—and advances the conjecture, that the contagion is augmented, by a process very analogous to the assimilation of the fluids of the living body to the primary taint, as in small pox, or syphilis, or to what happens in common fermentation. It cannot escape observation, that we have here a purely gratuitous speculation, sustained only by false analogies, and which, indeed, are opposite and irreconcilable. No such assimilation takes place, in the diseases mentioned, as has long been shown—and between the actions of living and dead matter, there is not the slightest resemblance under any circumstances. Deplorable, indeed, is the cause, which seeks support in an illustration of the one, by an appeal to the other, in the present condition of our knowledge. Conceding that there is a combination, as represented in the case, then a *tertium quid* inevitably results, according to the laws of chemistry, and the matter of contagion becomes wholly changed and destroyed. Yet, slender and unsound as is this edifice, it will probably never be entirely subverted while it has for its support, the talents, industry, and resources of its distinguished author.

By the late Professor Rush, who was never able to discard, completely, his early prejudices in favour of contagion, it is admitted, that the disease is occasionally propagated in this way. Discrediting, however, the elimination

of contagion, he supposed that, in such cases, it originates in an exhalation from the excretions of the patient—as the urine, the fæces, perspiration, &c. But, as always must happen, with regard to error, this explanation equally fails. The fact is, that such filth is not permitted, in hospitals or elsewhere, to accumulate, and become putrid—and were it to be done, the disease produced by it would be as diversified in its nature, as the effluvia from these various sources. But what is the fact? Cases of the fever are the same, differing only as relates to the degrees of violence, and with the slight modifications effected by constitutional and other peculiarities.

Contaminated air, in my opinion, has a very considerable influence on the character of disease, though it does not operate in any of the modes I have hitherto noticed. The invariable effect of it, is by a sedative action on the nerves, to depress the system, inducing a typhoid state. Crowd persons together, in an ill ventilated position, and we have, in a very short time, low fevers of this description. To this purport, the facts are numerous and indisputable. By what precise process it operates, is not known. It seems to me, however, not mainly by any poisonous emanation from the excretions, as is usually maintained, for reasons I have already assigned. As a mere conjecture, I will suggest the probability of the atmosphere, under these circumstances, becoming a morbid agent, by the loss of its oxygen. The primary effect of such a state of air, is to create pulmonary oppression, attended by languor, nausea, giddiness, depraved vision, tension of the forehead, and other symptoms of nervous and cerebral affection—and eventually, by a continuance of the exposure, low fever is induced. Whatever may be the explanation, of the fact there is no doubt.

As such is the case, it is not inconceivable, that yellow fever, breaking out under the above circumstances, might possibly have the typhoid character so strongly impressed on it, as essentially to change, or even supplant its primary nature, and since it is supposed to be incident to this latter



form of disease, contagion might be evolved. Even then, however, we should have *typhous* and not *yellow* fever, and evidence derived from occurrences of this sort, could not be received. But the case is put altogether hypothetically. No positive proof, I repeat, is afforded to warrant the supposition of contagion in yellow fever. The disease proceeds from other causes, and in its dissemination, is independent of personal contaminations. To my apprehension, it is a principle, sufficiently demonstrated by the curious and recondite researches of Webster, that all climates are liable to the periodical visitations of epidemics, and that they alternate as regards their general character, two of the same nature never occurring in immediate succession. No law has ever been more strikingly exemplified than this, in the medical history of our own country. The yellow fever is a disease of summer, confined pretty much to large cities, and which exercised, at first, a decided dominion over all other morbid affections. It passed away in the progress of time, and was succeeded by an epidemic of winter, the spotted fever, or typhoid pneumonia, as it was called, prevailing chiefly in the country, and which, in no less degree, impressed its peculiarities on the subordinate complaints. That, too, ran its course, and on its cessation, the yellow fever again reappears, and for a term will, in all probability, continue.

With such facts before us, can we, without unreasonable scepticism, refuse our assent to this truly philosophical doctrine, and its deductions?

Whatever may be thought of the correctness of the views which I have ventured to deliver, they are dictated by prudence, and lead to salutary consequences. They admonish us, in the present unsettled state of the subject, to guard the avenues to our cities, by strict quarantine regulations, against the too near approach of foul vessels—and, at the same time, no less enjoin on us, to preserve cleanliness, by the institutions of a wise and vigorous police.

Whether the fever be contagious or not, it seems generally

to be admitted, as a very rare incident, so much so, that it cannot possibly constitute the only medium of the propagation of the disease. Except in the mode I have stated, it is quite certain, I think, that it is incapable of importation. Caused by contagion, only that, being brought on board of ship, in a foreign port, every one of the crew would be exposed to its attacks, on the passage, as in small pox and similar cases. But instead of this, in all instances, of which I have heard, the disease has ended without any extension. Granting it to be contagious, it should, moreover, be widely disseminated, by practitioners engaged in the treatment of it. But though no evidence to this effect can be cited, and the danger from it be entirely visionary, it is not easy to acquit those of a glaring inconsistency, who, entertaining such an opinion, shall come, as is unhesitatingly done, from the abodes of the infected, to visit other patients, or to mingle in general society. By their own showing, the clothes which they wear, at the time, must serve as *fomites*, and thus prove the means of spreading the fever, even in an aggravated shape, since disease, acquired in this way, is more violent than directly from the sick.

Nor is this the only part of their conduct which is amenable to criticism. These same practitioners, while pursuing such a course, will unite in the severest penal measures, against the slightest violation, in others, of the most absurd restrictive regulations. By our system of quarantine, which is a direct emanation from the hypothesis I am examining, all intercourse with the sick, and indeed with the inhabitants, though well, of infected cities, is formally prohibited—as if the disciples of contagion reserved to themselves the ungracious office of diffusing the poison.

By the provisions of our health law, an individual coming from a foreign port, where the fever prevails, though no sickness may exist in the ship in which he arrives, is compelled to sojourn, for a certain term, out of the city, lest he might operate as *fomites*—and the same regulation is enforced against our own cities. Even admitting that

the clothes of such persons may possibly convey contagion, would it not immediately occur to every rational mind, that the danger is readily to be obviated by a complete change in this respect.

To *a priori* reasonings, I am aware, it is not safe to trust, in science. But were we permitted the indulgence on the present occasion, it might be asked, why our large cities, with filth, temperature, and every other quality required for the production of malignant fevers, should not generate them? To suppose the contrary is, indeed, as inconsistent with the laws of nature, as it is repugnant to the exact and equal dispensations of Providence.

Every nation, and the sentiment is nearly as old as recorded time itself, feels an aversion to allow pestilence as one of its products. The pride of country is always aroused by the aspersion, and endeavours to vindicate itself at the expense of some other region. As an alien, no where received or entertained, it has been, and continues to be, cast from place to place, and from clime to clime, without any acknowledged "habitation or home."

To the West Indies we look for our heavy visitations of this calamity—and the people, in the same spirit of delusion, closing their eyes to circumstances around them, are lulled by the hope of its coming from the little island of Bulam. Encouraged to prosecute the inquiry, I have no doubt, we should be told at this spot, if it be inhabited at all, that they derive it from the east, the nursery of all pestilence. The fact indeed is, that the primary source of the disease has actually been assigned to Siam, a position in the oriental world, and whither the Siamese go to locate it, I know not. Thus having performed a voyage of circumnavigation, we should return with the report, that the imputation was every where disclaimed, and that we had been chasing a shade always fleeing before us, which we could not overtake or grasp.

It may seem a little extraordinary, that I should thus labour a point so slenderly sustained, and from which the ground on which it rests is daily sliding away. But it is to



be recollected that this specious, though mistaken view, is still so upheld as to attract attention—and as its purport is evil, should, if possible, be utterly refuted.

The doctrine of contagion, continues to be countenanced by some highly respectable professional authority—has the support, in a great degree of popular prejudice—and forms the basis of all legislation, both municipal and international, on the subject. To commerce it is most ruinous—interrupts our social intercourse—and, of many of our primary duties, is entirely subversive.

As the offspring of this great error, we find that abroad, during a certain season, the approach of our vessels is watched with suspicion, and their ultimate admission encumbered with the vexatious regulations which distrust never fails to establish—that our domestic trade is subjected to the same sort of inconvenience—and even the ordinary communication between neighbouring cities, or the adjacent country, impeded, to their mutual disadvantage—that under its dispiriting influence our very nature becomes degraded, in the loss or suspension of its charities and sympathies, when the spectacle is presented of friend turning from friend, and kindred shunning kindred, from the apprehension of personal insecurity. Entertaining the impressions which I do, I most solemnly enter my protest against this doctrine, as false in itself—as mischievous in all its tendencies—and I would add, (did I not entertain the profoundest respect for some of my adversaries,) equally derogatory to the present state of medical science, and the enlightened age in which we live.

It remains for me, in closing the subject, to indicate the preventive policy in malignant fevers, which may be very briefly stated.

1st, Being apparently produced by foreign as well as domestic sources of exhalation, it is incumbent on us to guard against both by rigid quarantine regulations, and an attentive police. But inasmuch as no evidence exists of contagion, such regulations should be restricted to foul vessels exclusively, and not at all apply to persons, under any cir-

cumstances. This would leave open the freest communication between the inhabitants of neighbouring cities, and remove every other evil and inconvenience so oppressively experienced from the narrow and illiberal system hitherto pursued. To avoid all danger from suspicious vessels, it should be required that the cargo be taken out at an *entre-pôt*, or place of deposit, at some distance from the city, and to such vessels, for a certain period, an entrance be suspended, and never granted till thoroughly purified.

As it has been shown with sufficient probability, that this fever uniformly breaks out, and is located at the *watery margin* of cities, it follows that there is something peculiar in the state of the positions in which it is generated, and hence, that the remedy is obviously to do away such peculiarities, which, as before stated, I believe to consist in circumstances assimilating them to the condition of a foul vessel.

On this point I would suggest the substitution of stone, in place of wood, as the material of wharves, and that the interior of the structure be filled up with stone, instead of earth, or the rubbish of a city, as is now practised, which undergoes putrefaction, or some other process by which miasms are evolved. The interior of wharves which have long existed, might, perhaps, be permitted to remain, with a new face of stone—though, to attain security, the surface should be paved.

2d, As entering into the same views, it will be proper, also, to afford to this marginal line of every large city, now, as the immediate seat of trade, literally choked up by a concentration of buildings, a freer ventilation, by the opening of streets, and in all other respects, as far as may be, to remove its baneful peculiarities.

Cleanliness throughout the city should be preserved—for though I do not believe that ordinary filth is productive of the fever, it is unsightly and offensive—generates other diseases—and may probably even aggravate pestilence.

To institute such a reform as I have proposed, in our cities, will undoubtedly be attended with some expense.

But the wisest and most productive of all economy, is that which judiciously appropriates money, and when we reflect on the saving of human life it secures—the anxieties and fears it prevents—the protection it gives to trade—the general prosperity it advances, as well as the vindication it affords to the character of our climate, against the most pernicious imputation, all calculations of cost dwindle into insignificance, and even the sordid and penurious become silenced in the contemplation of so goodly a prospect.\*

3d, When the disease breaks out in a city, the infected spot and its immediate vicinity should be entirely evacuated, and all intercourse with them carefully avoided. Exactly as in the case of fire, pestilence is to be checked by the removal of the subjects on which it acts. We, in the one instance, intercept the progress of the conflagration by pulling down adjacent buildings, and in the other, malignant fever may be arrested, by the expulsion of the inhabitants living within its noxious sphere. This plan was executed with the greatest success on the last visitation of the fever among us. But formerly in this city, and it is still done elsewhere, under the impression of the contagious nature of the disease, the sick only are removed, which proves wholly ineffectual as a measure of suppression, and has the effect to increase the mortality of the disease. It is impossible that such a course of proceeding, except in relation to the indigent and destitute, should be too strongly condemned. To take an individual forcibly out of his own house, to convey him to a loathsome hospital, is an act of tyranny often followed, under such circumstance, by serious, and even fatal consequences, by exciting a great degree of terror, by an exposure in the removal, and by the deprivation of the comforts, conveniences, and solaces of home.

4th, As soon as the existence of the fever is proclaimed, let barriers be raised around the tainted situation, to indi-

\* Two or three years ago, a noble and efficient plan to this end was presented to the constituted authorities of this city, by my friend Paul Beck, jr Esq. one of the most intelligent, enterprising, and liberal spirited of our citizens.



cate the line of danger, and to cut off the entrance into it. The seeds of the disease are in the atmosphere within, and not attached to the sick, who in any other position may be visited with perfect safety. But on those whose duties lead to such an exposure, I wish to press with all the emphasis I can command, never voluntarily to visit an infected district, either early in the morning or after night; the reasons for which observance I have sufficiently explained in my former number.

Nor do I less deliberately believe, that it is highly important in mingling in this scene of peril, to protect the stomach, on which the remote cause of the disease unquestionably impinges, by a portion of food which operates preventively, in all probability, either by shielding the susceptible surface of that organ, or by calling into action the digestive process in which the poison is neutralized or destroyed. Let, moreover, due attention be paid to the regulation of diet, clothing, the state of the mind, and to whatever else is known by neglect to prove an exciting cause of fever.

5th, Whether any advantage may be derived from the fumigations of chlorine, or the sprinkling of the surface of a distempered district with the carbonate of lime, with a view to the correction of miasmata, is to be decided by future experience. The trials of this kind, hitherto made, are not encouraging. Where the spot is circumscribed, as sometimes happens in the very commencement of the fever, such expedients might be useful. But when miasmata are diffused, as is indicated by the wide spread of the pestilence, to resort to processes of this sort with the hope of suppressing it, would be as silly as to endeavour to calm the raging ocean by dropping oil on its waves.

*(To be continued.)*

## CASES.

ART. VIII. *A Case of Fistula in Perineo, attended with considerable loss of substance, cured by the application of Lunar Caustic.* Communicated by W. E. HORNER, M. D. Adjunct Professor of Anatomy in the University of Pennsylvania.

AN opinion prevails with some experienced surgeons, that fistula in the perineum, when the surfaces become callous, cannot be cured, and that an opening through which urine will ooze from time to time, must necessarily remain for life. The following case presents details calculated to combat this opinion, and to stimulate the practitioner not to desist till a cure is effected.

Mr. B. a gentleman of Baltimore, was taken in the West Indies, during the night of the 15th of November, 1817, with pain and inflammation of the perineum, supposed to arise from the sting of an insect. Poultices were kept on the part till suppuration followed. A pint of pus was then discharged by a spontaneous opening on each side of the perineum. After six weeks confinement, he thought himself well.

Mr. B. being at Curracoa the succeeding March, discovered his mistake in presuming himself well, for he now discharged urine through an opening in the perineum, from a branch of the abscess having reached the urethra. Going afterwards to St. Croix, about the middle of May, an attempt was made to cure him, by the daily introduction of a catheter. The surgeon could not get the instrument into the bladder, but having cut off the closed end of the catheter, he succeeded in inserting it sufficiently far to enable him to draw off the urine. This treatment was continued without advantage till December 1st. In the mean time a branch of the fistula was discovered in the scrotum.

In January, 1819, a cut was made across the perineum, with a view of opening and exposing the sinus formed in it. This incision was kept dilated by sponge. After a time, a branch of the sinus was observed to pass behind the prostate gland. The latter branch was also, for five or six days, kept dilated by sponge, introduced to its bottom. At this period a branch of the sinus, which had extended itself into the right thigh, was by injections of water, discovered to communicate with the rectum. The sponge dressing being laid aside, a catheter was introduced into the bladder from the perineum, and kept there for three months—during which period, the fistulous branch in the thigh and in the scrotum, got well, and the opening in the perineum diminished, leaving a communication with the urethra large enough to admit a finger. In the mean time, from the disuse of the urethra anterior to the fistula, it contracted so as to be almost closed—to remedy which a catheter was introduced through the penis, and brought out at the perineum.

April 15th. A catheter was introduced through the penis into the bladder—after which an attempt was made to heal the fistulous branch on the back of the prostate, by dressing it from the bottom with lint, and by stimulating injections. These means failed, and were abandoned. During these trials, the fistula in the perineum became cicatrized on its surfaces. The latter process was resisted ineffectually by sponge tents, blue vitriol, cantharides, and so on till October. Other attempts, made in the subsequent December, were thought to have produced surfaces sufficiently raw, to be followed by an adhesion between the contiguous sides of the perineal fistula. Approximation by pressure was accordingly applied, but the experiment failed. Subsequently a part of the cicatrized surface was removed by the knife, but it is supposed that the incisions did not go deep enough, for this attempt was also unsuccessful. In January, 1820, the catheter was removed from the urethra.

The foregoing account is an abstract from the journal of the patient.

Mr. B. arrived in Philadelphia, May 6th, 1820, in the



following state. Appetite and spirits good—refreshing sleep—disposition to corpulency. He had now been nearly two years in his chamber, and on his back the principal part of the time. The opening in the perineum was a conical cavity, the base of which occupied almost the whole space between the anus and the posterior face of the scrotum—the apex terminated in the membranous part of the urethra, just behind the bulb, by a transverse slit of half an inch in length. The whole surface was cicatrized. It was, however, kept moist by a slight exudation from the part. A sound, introduced through the penis into the bladder, was plainly seen at the apex of the fistula, or more properly speaking, the opening through the perineum. A probe bent in a particular way, and introduced through the opening into the urethra, might be carried along the latter into the sinus on the back of the prostate, which was proved to be tortuous. The point of the probe was felt from the rectum without difficulty. The urine was discharged habitually through the perineal opening, but pressure applied there turned it into the natural passage.

Mr. B. came to town for the benefit of Dr. Physick's advice. Drs. Parrish, Gibson, and myself, constituted a consultation. In the commencement of June, Dr. Physick, warranted by his experience in other cases, proposed the following plan of treatment. To remove the cicatrized surface with lunar caustic, and when beginning to granulate, to bring the front and back surfaces of the opening into contact, so as to produce their adhesion. The fistula at the back of the prostate, was the principal objection to this plan, because the patient thought it might produce inconvenience after the other was healed.

The surface of the perineal opening was accordingly well excoriated with lunar caustic, four times, at proper intervals, when on the 11th of June it appeared in a state of granulation suitable to obtain adhesion. A catheter was passed through the penis into the bladder, and the anterior and posterior surfaces of the opening brought into contact by compresses on the perineum.

June 12th. Adhesion seemingly, at the apex of the opening.

June 18th. Catheter removed. Strong current of urine through the urethra. No urine came through the perineum.

June 24th. Some blood discharged through the urethra, supposed to be from a fungus granulation within.

June 26th. Cavity in perineum much diminished. Some indistinct sensations of pain in the part.

July 3d. The apex of fistula completely united and cicatrized.

August 12th. Departed for Baltimore, pronounced cured by the medical attendants.

The patient had learned from his West India surgeons, that it was all important to have the fistula behind the prostate, cured before that in the perineum, and a very serious operation had been proposed for this end. When the other plan was announced to him by Dr. Physick, he received it with great hesitation. He did not believe in the successful progress of the treatment when it was obvious to every one else—and even when cured, he left Philadelphia under an impression that his state was not improved. This conviction has since then changed, and assured of his restoration to health, he has written to Dr. Physick a letter expressive of his thanks, and of his sense of the services rendered.



ART. IX. *On the Prolapsus of the Uterus.* By WILLIAM P. DEWEES, M. D.

A PROLAPSUS of the uterus is a very common affection, especially among the hard working women of the community—and does not unfrequently happen among females in the higher walks of life. It is a complaint oftentimes of serious moment, and sometimes gives rise to a chronic state of ill health, where its agency is not suspected. It is with a

view to call the attention of practitioners to this point, that the following cases, illustrative of what we have just advanced, are given.

In the cases about to be related, no suspicion was entertained that this derangement existed—nor was it probable it could have been thought capable of producing such effects had it even been known, since no examinations were made to ascertain the fact, nor any attempt made to replace the uterus. Indeed, the extent of the mischief it is capable of producing has been known to myself but a very few years, and then only by accident—for though I was aware that the patient laboured under a prolapsus, I had no suspicion that some other severe symptoms were dependent on it. I will however proceed to relate the cases, as they will best illustrate the point we wish to enforce.

CASE I.

Mrs. T. aged thirty-six years, applied for my advice for a severe pain in the left side, immediately under the margin of the false ribs, extending to the spine of the ileum of the same side. She informed me she had had this for several years with more or less severity, and for which she had undergone severe medical treatment, such as bleeding, purging, blistering, leeching, &c. without the slightest benefit. The pain was not increased by respiration, pressure, or motion, but some relief was constantly experienced upon lying down, and especially as the night advanced. She could lie in any position without any increase of inconvenience, but felt most comfortable in a bent posture.

I prescribed for her a variety of medicines with no better success than those who preceded me, and began seriously to despair of being any way useful to her, when thinking the leucorrhœa, with which she was severely afflicted, might have some agency in weakening her, and believing this, from the description of her feelings, to arise from a prolapsed uterus, I mentioned my suspicions to her, and stated the propriety of an examination to ascertain the fact.—



To this she submitted, and the uterus was found low in the vagina.

I now ordered her some astringent injections, as I always do at first in such cases, which were persevered in for three weeks with as much advantage as I contemplated—for the only advantage I expected from them, was to give a temporary tone to the vagina, before I should introduce a pessary.

At the end of three weeks I introduced a gilt pessary, and desired my patient to place herself upon her feet—this she did, and declared she felt much more comfortable than she was wont to do, when she arose from her bed, and observed that for the first time for several years, she was free from the pain in her side. Believing this to be only accidental, I paid but little attention to the declaration at the moment—but upon my visiting her the next day, she assured me she had had no return of it whatever, nor has she had to this moment.

This case made a strong impression upon me, especially as I could call to mind several similar affections of the side, in which I had failed to give relief, and made me determine, should another case of painful side occur, to inquire immediately into the state of the uterus. It was not long before this opportunity presented itself in a lady from the West Indies.

#### CASE II.

Mrs. D. had for several years, (five,) been much afflicted by a train of severe nervous affections—she would, frequently, from the slightest causes, be thrown into violent hysterical paroxysms, which required considerable time to calm. She had a fixed pain in the left side, which would occasionally appear to swell, and became extremely painful to the touch—when this took place she was almost certain that hysteria would follow. Her appetite was good, but her stomach could only digest certain articles—her bowels were constipated, and she had a profuse leucorrhœa of a purulent appearance. She was considerably reduced in flesh, and much debilitated.

She had tried a variety of remedies in the West Indies

for the local affection of the side—she had been repeatedly bled and blistered, without the smallest advantage—took mercury to a considerable extent—was freely purged and puked—but all to no purpose. When the pain was unusually severe, it was considered as spasm of the stomach. From the detail of her symptoms, I was led, however, to suspect a prolapsus of the uterus, and inquired whether that opinion had been given by her physicians at home—but she said it never had been suggested; it was considered as an affection of the stomach altogether, and all remedies were addressed to it, either directly or indirectly.

I proposed an examination per vaginam, to which she very reluctantly consented—and that examination confirmed my first suspicion of her case. I ordered her the tincture of cantharides, and some astringent injections—also, small, but daily doses of rhubarb; and continued this plan for nearly three weeks. At the end of this time I placed the pessary. She was almost instantly relieved from the usual symptoms attending a prolapsed uterus, and also the afflicting pain in her left side.

Experiencing such immediate relief, and the almost total exemption from her nervous feelings, she became careless, and allowed her bowels to become, as they were wont to be, excessively costive, and in an effort to relieve herself, she discharged the pessary. This accident she concealed from her friends for some time, until a recurrence of all her former inconveniences and pain, forced her to a confession of it. I was immediately sent for; and the loss of the pessary made known to me. I replaced it, and she again was restored to comfort; and now, a period of five months, is in the most perfect health. She is now never troubled with hysteria—palpitation of the heart—or any of her former nervous sensations. She can eat without selection, and her bowels are perfectly regular.

#### CASE III.

I was requested to visit Mrs. P. who was represented to be suffering very much from an habitual colic. Not

being well, my friend, Dr. Knight, kindly visited her for me, and prescribed a dose of laudanum, &c. which procured her a tolerably good night's rest. I saw her the next morning, and found her under the distressing after effects of the laudanum, but comparatively easy. She gave the following history of her complaint. She was attacked about twelve years ago with a pain in her left side, which was occasionally so severe as to produce hysteria, and other disagreeable nervous affections. The pain was not augmented by pressure, cough, or respiration. She would swell, sometimes very suddenly, and then the pain was increased. She was much incommoded by exercise, or long standing, and if either were continued too long, she would become faint, and much pained. When this took place, she would be obliged to go to bed, take laudanum, and be unable to rise for several days together. She had leucorrhœa to a great extent—was much debilitated—and extremely pale—her appetite feeble—and her digestion bad.

She was much afflicted with headach, and pain in her back—also with a severe numbness down the thighs, after standing awhile upon her feet. She had tried a great many remedies for the period above stated, and she considered herself growing worse daily.

Suspecting a prolapsus of the uterus as the cause of her complaints, I proposed to ascertain it, to which she readily consented. The uterus was found very low; the os uteri could be felt just within the labia. I procured a pessary, and introduced it immediately, without any previous preparation, as she was obliged to go to New York, her place of abode, the next day. She was instantly relieved by the pessary, and declared herself, in five minutes after its application, to be perfectly free from all pain and inconvenience.

I had the pleasure to learn this very day, (September the 25th, 1824,) that she remains perfectly well, a period of nearly four months.

#### CASE IV.

Mrs. L. a very delicate woman, aged twenty-eight, after a premature labour, attended with a great expenditure of



blood, was attacked with a severe cough, which seemed to threaten phthisis. She was, however, relieved by a persevering use of remedies, and change of air, of her cough, but there remained a fixed pain in her left side, together with a sense of bearing down in the pelvis, and a strong desire to make water, whenever she stood upon her feet. I was convinced she laboured under a prolapsus, and mentioned this opinion to her friends. She would not, however, submit to having it tested by examination, but permitted an old nurse to prescribe leeching to her side, followed by blistering. She experienced no advantage from these remedies, and was at length prevailed upon to allow an examination per vaginam.

I was again requested to visit her, and to make the proposed search—this proved the uterus prolapsed. After due preparation, as above suggested, I applied the pessary, and she was immediately relieved, and continues well to this moment.

These cases prove most satisfactorily that sometimes the consequences of a prolapsed uterus are more extensive and more severe than have hitherto been suspected; and also teach us, under circumstances like those above detailed, to make the necessary inquiries into the condition of the uterus. I will not pretend to account for this pain of the left side from this cause, nor decide that this is invariably the seat of this sympathetic affection, since my experience is not sufficiently ample to warrant such a deduction; I can only say, at present, it has prevailed in four consecutive cases, which are by no means to be considered as sufficient to establish a rule.

The pessaries I employ, are of silver, well gilt, and are made for me by Mr. John Rorer, surgeon's instrument maker, Arch street, above fifth.

ART. X. *A Case of Malformation of the Heart and Principal Arteries.* By REYNELL COATES, M. D.

JOHN MURRAY, a boy of delicate appearance, aged about seventeen years, was admitted as a patient into the Pennsylvania Hospital, in May last, with a severe fracture of the thigh, and extensive burns, caused by his being buried under the ruins of a heated wall, at a fire in the Northern Liberties. These extensive injuries put a period to his sufferings, on the third day after the accident.

During the exposure necessary in the examination of the case, I observed an unnatural pulsation on the right side of the sternum, which led to the suspicion that there existed an aortic aneurism of considerable dimensions. By applying the hand and ear to the thorax, the peculiar thrill, and the hissing noise generally attendant upon that disease, were found to be strikingly perceptible.

On the death of the boy, permission was obtained to examine the body; and accordingly, on the following morning, I opened the thorax, removed its entire contents, and proceeded, in the presence of several respectable medical gentlemen, to investigate the structure of the circulatory apparatus.

The lungs collapsed imperfectly. A number of adhesions, firm and not of recent appearance, connected the adjoining pleural surfaces, upon the right side. The texture of the pulmonary organs, was more resisting than usual, and their colour continued more florid, from the quantity of blood retained in their minute vessels.

The size of the right lung, exceeded that of the left in an undue proportion.

The pericardium appeared inflamed in some places, although there were no adhesions. The cavity contained about two ounces of serum.\*

\* All that portion of pericardium which was unaltered in texture, remained transparent. This remark is added because it has been said that

The cavity of the aorta, immediately below the origin of the subclavian artery, was contracted to the diameter of a writing quill. Between the heart and the commencement of the arteria innominata, there existed a considerable enlargement. The last mentioned artery was somewhat larger than usual, and immediately beyond it, the aorta contracted to about its proper dimensions.

The left subclavian was a little dilated at its origin—and when a catheter was introduced in a retrograde direction, through this vessel, it immediately entered the left branch of the pulmonary artery, near the great bifurcation, by a canal answering to the fœtal ductus arteriosus. This canal was about one-fourth of an inch in length, and equal in calibre to the subclavian artery. The pulmonary artery was of very unusual size; as were, also, its immediate branches.

The exertions of the left ventricle to overcome the difficulties which opposed the circulation in the aorta, occasioned the parietes of that cavity to be greatly increased in strength and thickness—and a section being carried through this part, from the apex of the heart to the commencement of the aorta, several unusual appearances presented themselves. A preternatural ring formed a stricture at the neck of the ventricle, so much contracted as to deny the little finger a passage into the artery. Some small ossified points were felt beyond this ring, which was then divided, and the first incision was continued into the aorta, a little beyond the semilunar valves. These were found to be only two in number, and the ossifications already alluded to lay in their free edges. Nothing peculiar was remarked in the structure of the internal coat of the artery.

The auricles offered nothing peculiar; the foramen ovale being closed in the usual manner.

death has not usurped entire control, while this membrane continues to transmit the light. In the present instance there existed no evidence of lingering vitality. In many parts of the body the process of disorganization had commenced, and the whole was deprived of all tonicity. In a case mentioned in Cooper's "*Essay on Ligature of the Aorta*," the same appearance presented itself.



This little boy had been from birth affected with violent palpitations, severe headaches, vertigo and occasional epistaxis—symptoms perfectly intelligible, from what has been already stated. His mother also mentioned, that his skin had always been of a livid cast, but she was not aware of any deficiency in the temperature of the surface. He was a child of quick and vigorous understanding; but it is worthy of particular remark, that although he had attained his eighteenth year, the voice and whole appearance were more consistent with the age of ten or twelve. The genital organs were particularly deficient, and it was with extreme difficulty that the finest elastic catheter was introduced into the bladder, some hours after the accident. He had been subject to suppression of urine, unaccompanied with any stricture, but apparently dependent upon the very small dimensions of the urethra.

As neither the intercostal nor mammary arteries were much increased in size, it is to be regretted that the extent of our permission did not warrant a complete examination of the route of circulation, for which purpose we should have required unlimited control over the body.

The dangers attendant upon such malorganization, and the practical inferences which may be deduced from it, are too well understood to need a single comment; and it is a matter of surprise that life should be so long retained amid the perils that invested it.

#### *Description of the Plate.*

Fig. 1, is a view of the heart externally, and in front, showing the deviations from the ordinary structure in the blood-vessels.

A. the arch of the aorta, enlarged at this point.

B. the arteria innominata, and the origins of the right subclavian and carotid.

C. left carotid.

D. left subclavian.

E. stricture in the aorta.

F. aorta descending below the stricture, tied at the end.



Fig 1

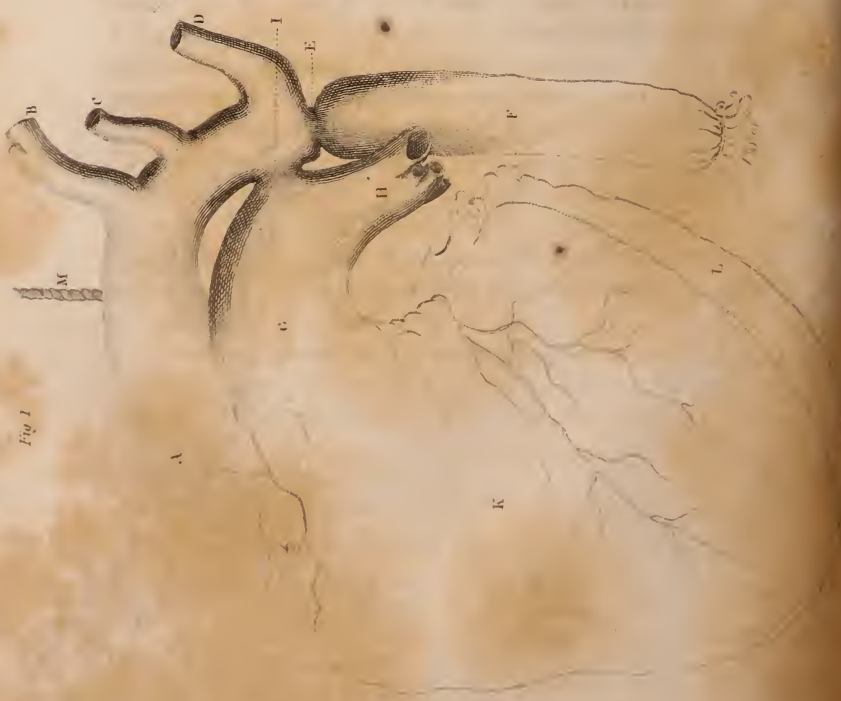
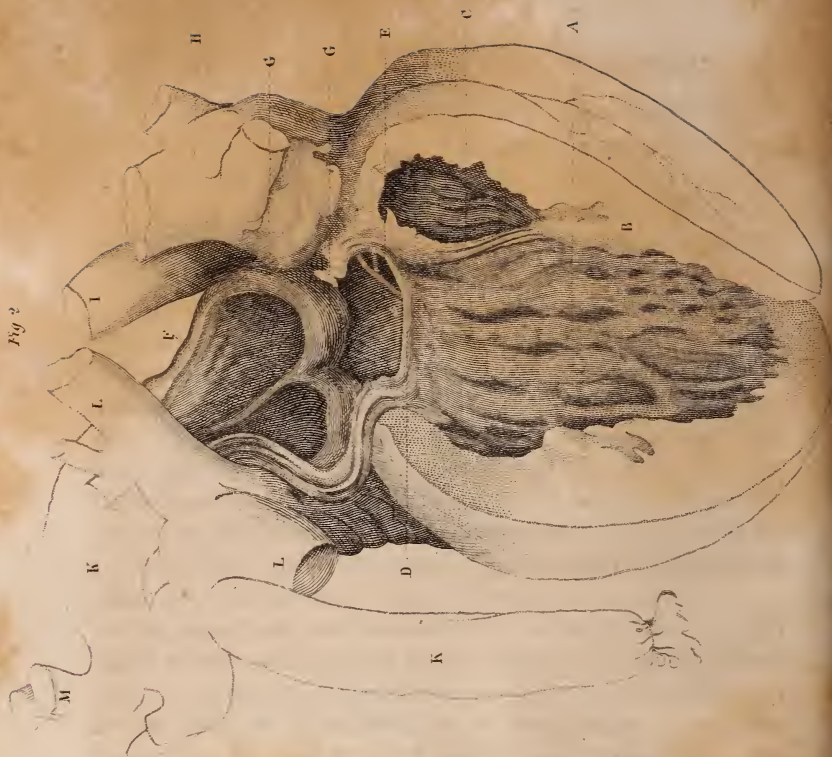


Fig 2





G. pulmonary artery.

H. right branch. The left branch is not in view, being behind the preparation.

I. ductus arteriosus, pervious and of considerable size.

K. right ventricle of the heart.

L. left ventricle, opened, but its cavity not displayed.

Nearly the whole of both auricles are out of view—but a small portion of that of the right side is visible directly under the letter G.

Fig. 2, is a view of the cavity of the left ventricle and aorta, exhibiting the peculiarities existing in them.

A. Cavity of the left ventricle.

BB. thickness of its parietes; which is much increased.

C. one of the valvulæ mitrales; behind which is seen a portion of the left auricle.

D. circular contraction of the ventricle, cut through. This contraction reduced the diameter of the outlet of the ventricle, previously to being divided, so much that the end of the little finger could not enter.

E. small preternatural frænum enclosing two pits, separated by another small frænum.

F. cavity of the aorta.

GG. the *two* semilunar valves; the third being wanting.

H. three of the pulmonary veins, cut off near their terminations in the left auricle; part of which is in view.

I. vena cava descendens, cut off.

KK. the aorta. The blood-vessels are turned on one side, and no longer preserve their relative form.

LL. the two principal branches of the pulmonary artery; also showing two smaller branches terminating in one of them.

M. the arteria innominata, with its bifurcation.

N. the left carotid.

O. the left subclavian.

P. the ductus arteriosus.

ART. XI. *An extraordinary Case of Rupture of the Uterus.*—

Communicated by O. R. BROYLES, M. D. of Cambridge, South Carolina.

**CALLED** to my patient, by the directions of a midwife, to whom the case had, in the first instance, been entrusted, I visited her on the morning of the 18th of August. I found her resting very quietly, as if asleep, and was informed by the midwife, and several women present, that her labour pains, which came on her eight hours previous to my arrival, had been very slight, and had entirely subsided immediately after the discharge of the liquor amnii. The pains were represented as producing little or no effect upon the child, even though the presentation was right, and the os uteri sufficiently dilated. No pain was at this time complained of, except a slight soreness over the abdomen on pressure. The pulse was soft and full, but a little hurried, and the countenance quite natural. From these appearances, I entertained no fear as to her situation. No vomiting at any time had taken place, nor any sudden screaming, so commonly connected with this accident. No feelings within had inspired the patient with uncommon fears, and in short, ten hours after the accident, when I saw her, nothing existed, except that she was rather more restless than common, and her respiration shorter and more hurried than I have commonly witnessed in lying-in apartments. Of course, I did not apprehend a rupture: my conclusion was, that the contractions of the uterus had been suspended by a premature discharge of the liquor amnii, or by a temporary debility of the uterus itself; and that the pains, though at first light and transient, would, in the course of a few hours, be resumed, and the patient most probably safely delivered. Yet, rather than trust the case to the management of a midwife, I determined, as my other duties necessarily prevented my further attendance on her, to make some exertion to excite the uterine action. For this purpose I gave the ergot, in the ordinary way,

without, however, the slightest effect being produced by it. I then prescribed an anodyne injection, with such other means as would commonly be recommended in the situation in which I supposed her to be, and returned to my residence.

Three days afterwards, I was informed that my patient had died. Mortified and surprized at this intelligence, and withal somewhat solicitous for my reputation, on account of the favourable opinion which I had expressed, I immediately instituted an inquiry into the manner of her death. I was informed, that respiration gradually more short and hurried, with restlessness, and cold extremities, were the precursory symptoms. No pain had been complained of in the bowels—no hemorrhagy nor vomiting had occurred to the last. Thrown into a state of the utmost doubt and uncertainty by such an extraordinary course of events, I determined to see, by an examination of the body, if a rupture could have been the cause. Three days after burial, I had the body raised, and in the presence of my friends Drs. Dogan and Williams, I proceeded to the dissection.

The following were the appearances. On opening the abdomen, the breech and extremities of the child were found confusedly mixed with the intestines. The rupture had taken place at the symphysis pubis, and extended itself in the direction of the linea ileo pectinea, each way, until two-thirds of the uterus was torn asunder. The uterus was found reflected into the lumbar region, somewhat contracted, but easily dilated to its former dimensions. On examining more minutely its condition, an extraordinary thinness was found to exist at the place of rupture. I discovered, from examination, that no sharpness of the linea ileo pectinea could have contributed to produce this effect; and that every circumstance existed, of the most favourable character, except this most palpable deficiency of the uterine organization. To what cause, then, shall this last result be referred. May it not have arisen from the pressure of the child, during several of the last months of pregnancy? My conviction is, that such is the fact—and to this conclu-



sion I have been led, by several corroborating circumstances. My patient had an unusually projecting sacrum—and as a very natural consequence of such a condition, her abdomen was much more pendulous than common, by which the weight of the child was made to rest upon the pubis. To the pressure thus occasioned I have thought proper to ascribe this local debility, and thinness of the uterus, which at the ruptured point, was as thin as buckskin. I see no physical reason why such a result might not arise from such a cause.

It may be proper to suggest, that I have only the evidence of the midwife, and other women present, in proof of the weakness of the pains, at the time of rupture. But when it is recollected that the pains, even in the moments of their utmost exertion, seemed to produce no effect upon the child, even though the presentation was right, together with the unexampled thinness of the uterus at the place of rupture, little doubt can be entertained of the correctness of the conclusions.

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ART. XII. *Case of Hydrocephalus Internus, communicated in a Letter to the Editor.* By PEREGRINE WROTH, M. D. of Chester Town, Maryland.

A CASE of hydrocephalus internus lately occurred in my practice, which was successfully treated by purging, by means of croton oil. I will give you a history of it in very few words, and leave you at liberty to mention the fact, if you please, in your Journal.

The subject of this case was a child of two years old. In about four weeks after a severe fall on her head, she became feverish, and in a day or two after the commencement of her indisposition, her fever increased, and she had a fit of considerable violence. In this situation a dose of calomel was prescribed by a physician of this town, which being fol-

lowed by a spoonful of castor oil, operated, and in a great degree relieved the symptoms. She continued, however, unwell, and as I then saw her for the first time, I concluded that the case was aggravated, if not produced, by the process of dentition, indubitable evidences of which existed, and by the presence of worms. The inflamed gums were incised, and anthelmintics exhibited, and although the teeth soon appeared, and some worms were expelled, the child obtained little relief, and that of short duration.

I now began to suspect something serious. The child passed almost sleepless nights—her slumbers short, with frequent starting and screaming—bowels not open—her eyes extremely sensible to light, and when the child was not asleep, were generally closed. On the contrary, when asleep, her eyes remained half open. She lay with her hands on her head, and when in the arms, her head reclined on the shoulder of the nurse.

In this state, three grains of calomel were ordered every three hours—her stomach, being very irritable, rejected every thing else, even food. Attempts were made and repeated to purge her by jalap, senna, and castor oil, but without success. Her head was now shaved, and a large epispastic applied over it, without relief. After continuing the calomel two days, I resolved to try the effect of croton oil in small doses. One-third of a drop mixed in mucilage was given and repeated. There was at this time great dilatation of the pupil, but the iris readily contracted on a candle being presented. Copious purging soon followed the exhibition of the croton oil, and with great relief to all the symptoms. Gentle aperients, continued a few days, removed every vestige of the disease.

The pathology of this formidable disease is still, I am inclined to think, very imperfectly understood, and the treatment, under any plan, has certainly been very generally unsuccessful. Of six or eight cases which have occurred in my practice, this is the only one which terminated favourably. The lancet has heretofore been my principal dependence. Blistering and purging have not been neglected—

but owing to extreme gastric sensibility, I have never, except in this case, succeeded in purging to my satisfaction by the ordinary means.

I am aware that worms and dentition sometimes produce symptoms so nearly similar to those of hydrocephalus, that the diagnosis is often very difficult. A common remittent, with the irritation of teething or worms, or a large collection of fæcal matter in the intestines, may be miscalled hydrocephalus. The stomach is always irritable—the bowels seldom free from offensive matter—and I am by no means certain that they are not more deeply involved in the peculiar morbid condition which has been called hydrocephalus, than is generally supposed.

From a consideration of this case, I am almost ready to conclude that in this disease, (hydrocephalus internus,) the brain only sympathises with gastric and enteritic, or visceral irritation.

It is very possible that I may have been mistaken in my opinion concerning the nature of this case. I am, however, fortified in this opinion by that of Dr. Browne, who stands, and deserves to stand, at the head of the profession here.



## REVIEWS.

ART. XIII. *Anatomical Investigations, comprehending descriptions of various fasciæ of the human body ; the discoveries of the manner in which the pericardium is formed from the superficial fascia, the capsular ligament of the shoulder joint from the brachial fascia, and the capsular ligament of the hip joint from the fascia lata, &c.* By JOHN D. GODMAN, Lecturer on Anatomy and Physiology, &c. Philadelphia: H. C. Carey & I. Lea, 1824.

AMID the great and astonishing advances that during the present age have been made in almost every branch of science, we are seldom attracted by discoveries in anatomy. This arises from several causes. The close and laborious researches that from the earliest records of this science have been made by its admirers, preclude the hope that we are to expect many new and brilliant discoveries at the present day, particularly as these distinguished advocates of science, unfortunately for their own fame, and the extension of our knowledge, have been, and are too often, content with following closely the footsteps of their predecessors, without attempting a new path for themselves. Hence, without a fortuitous concurrence of circumstances, but little advancement, comparatively speaking, has been made of late years, except by those, who, boldly disengaging themselves from the trammels of custom and prejudice, have, like the Genoese navigator, arrived at new and brilliant results by paths hitherto untrodden. How long were anatomists satisfied with demonstrating the structure of the brain by the absurd plan of slicing it into parallel sections, till the genius and labours of Gall directed their attention to a widely different and more natural method of studying its formation. In like manner, it is to the com-

prehensive and investigating mind of the illustrious Bichat, that we owe those excellent general views of the different structures, instead of the dry details of separate parts which hitherto composed the mass of anatomical writings.

It was, therefore, with no inconsiderable pleasure that we have perused this work, considering that it not only opens a new path for anatomical researches, and as demonstrating, what Bichat had left unexplored, the continuity, we may almost say the unity of the fasciæ of the body, but also as proving that even in this frequently trodden field of science, the world may "yet owe something to American physicians and surgeons." We have too long been content solely to rely on European works, or mere compilations from them: that time has, we trust, now passed. Within the last few years, we have been presented with many original and valuable treatises on the various divisions of medical science, to which we may proudly point as evincing the high state of the healing art in our country.

The treatise under consideration is the result of Dr. Godman's new mode of studying and teaching the intricate and complicated structure of the body. This method, which he terms the *ANALYTICAL*, promises to do much in the advancement of the science. The advantages of this mode of anatomical investigation are thus explained by Dr. Godman in the introduction to the work.

"By this method the *teacher* is always placed in the condition of a *learner*, and no authority is accredited but *demonstration*. No book is valued until its descriptions have been tested by rigid scrutiny, in direct comparison with the structure, as fairly exposed and competently observed. This appeal from *books* and authorities to *nature*, disperses the clouds which have too long involved the science of anatomy—removes the difficulties that have impeded the advances of the inquiring student, and opens the way to improvement, discovery, and truth."

He further says: "In consequence of a careful investigation of the modes of teaching anatomy, I have been induced to resort solely to the method of analysis or decom-

position. The subject is placed before the learner *untouched*, the knife is not used to clear obstructions from the way of the teacher previous to the lecture—the student sees the relation of parts—the anatomy as it is left by the hand of nature—he observes the manner in which they are to be successively removed—he sees the situation and company in which they are always to be found, and perceives that in this mode of examination there are no difficulties to impede his progress but inattention and neglect. The body is decomposed by the knife in his sight, and he soon acquires a clearness of information on the connexion of parts existing in the living system, which enables him at any moment to recollect what is to be encountered in any portion of the frame. The physiology he learns does not consist of a collection of scraps and fragments relative to each part separated—but it is the *whole* that can be learned from the *whole* in combination.”

Our author, we think, somewhat too generally accounts for the exclusive attention paid by some anatomists to particular portions of the body to the synthetic mode of studying anatomy. We cannot help believing that, on whatever plan it is pursued, still the peculiar theories or particular bias of the examiner will lead him to pay an almost exclusive attention to some one section of the animal economy. In fact, it does not so much depend on what he sees before him, as on his own preconceived opinions.

The discoveries that the author of the work now lays before the public, have been the result of this mode of examining the body. They are extremely important, not only in an anatomical but also in a physiological and pathological point of view, as explaining the intimate connexion and unity of parts hitherto considered as distinct. His idea of the uses of the sheaths of the vessels, founded on his discovery of the manner in which they are formed from the fascia, is ingenious; but we cannot conceive that these sheaths, although formed of “a dense fibrous membrane,” would afford the resistance to the elastic power of the arteries that Dr. Godman supposes; but even granting that



they apply an equal and uniform barrier to the dilatation of these vessels, still, as it is by the contraction of the arteries that the blood must be forced forwards, we can yet account for the additional impulse given to the blood in its passage through the system as satisfactorily as before : the only action of these tendinous sheaths being to prevent a too great and unnatural distension of the arteries, when, from any cause, the circulation is accelerated.

We will now endeavour to give a rapid and succinct account of his labours, premising, however, that it is one of those subjects which from its very nature it is almost impossible fully to understand or to follow, except on the body itself. We have had the pleasure of seeing the parts repeatedly demonstrated by our author, and are fully persuaded of the justness and fidelity of his descriptions. Previous to the publication of his descriptions, Dr. G. invited the anatomists and surgeons of the city to a public inspection of his researches, and repeated them in their presence, to the satisfaction of all who witnessed the examination.

The first section treats of the fascia superficialis. This fascia, which has hitherto been considered of comparatively limited extent, Dr. Godman has satisfactorily traced over a great part of the body. He describes it as covering the abdomen, whence it is found descending towards the top of the thigh, connected to the iliac portion of Poupart's ligament, and covering the spermatic ring and cord, it is continued over the corpora cavernosa penis, and sends down a process into the scrotum, known as Camper's ligament ; the external and largest portion passes downward over the whole of Poupart's ligament to the upper part of the thigh, where it gradually becomes thinner, and finally assumes the appearance of cellular tissue ; posteriorly, it may be traced to the spine and over the whole of the gluteal muscles, covering also the perineal muscles, where it presents a firm texture, and joins the exterior portion of the fascia on the penis.

Upwards, it passes from the abdomen over the thorax, both anteriorly and posteriorly—we may also trace it lying under the platysma myoides, and covering the whole neck, ascending in front to the edge of the chin, where it is lost in cellular texture; laterally, however, it arises higher, covering the masseter muscle and extending towards the ear, so as to overlay the parotid gland: the posterior portion continues over the occipital belly of the occipito frontalis, and is to be traced over this muscle till it becomes continuous with the lateral portion. This fascia also sends down from its anterior part, covering the neck, processes which doubling around the sterno-cleido mastoideus, thence pass forward again towards the trachea and anterior part of the neck covering the hyoid muscles, the trachea and thyroid gland—the other part runs outwards and backwards from the posterior edge of the mastoideus, extending downwards, and attaching itself to the acromion and spine of the scapula, where it gradually blends with the superficial fascia of the back.

This fascia is also continued from the pectoral muscle, and the clavicle, over the deltoid and muscles of the arm, and extends over the fascia of the biceps down to the back of the fingers.

Having thus attempted to condense our author's description of the extent of this membrane, we would offer a few remarks on the importance of a correct knowledge of its situation and connexion may be, as regards our prognostic and treatment of abscesses. It must be obvious that this tendinous fascia must have an influence in determining where suppurations will find vent: for instance, an abscess of the parotid will always break exterior to the mastoideus, and cannot find its way among the deeper seated parts of the neck. By attending to the strength and situation of this membrane, we may form a tolerably correct idea of the course that the contents of an abscess must take.

The second section is on the fascia of the neck: this is so minute that we find it impossible to condense it—we must therefore refer our readers to the work itself. He de-

monstrates the new and interesting fact, that *all* the fasciæ of the neck are derived from the fascia superficialis, of which there are six distinct layers, or processes, on the anterior part of the neck. He also shows in what manner the sheaths of the vessels are formed, by horizontal slips stretching from the anterior to the posterior portion. We have already stated that we do not agree with our author in his deduction as to the uses of these sheaths.

Section third treats of the formation of the pericardium, from the fascia superficialis: this forms one of the most interesting sections of the work; the most difficult to be understood, though by no means so from demonstration. Our author claims it as an original discovery—should it prove so, it is certainly an important one, and as he observes, “removes a stumbling block from the path of the student, who is inevitably bewildered when he tries to comprehend how a delicate serous membrane, the pleura, can form a strong fibrous capsule, such as the pericardium; as is usually taught.”

The pericardium is formed from, or continuous with, that layer of the fascia superficialis covering the thyroid gland, which passing under the sternum to the arteria innominata, there joins the outermost layer of this fascia, which covers the lateral and back parts of the neck; these fasciæ form a covering for the artery—it likewise affords a sheath for the subclavian, and joins that part of the brachial fascia which extends to the thorax, under the pectoralis major; the fascia is to be traced down to that part of the arch of the aorta where the serous membrane of the pericardium is reflected to form the immediate covering to the heart; this being cut through, the fascia can be raised from the surface of the aorta down to the commencement of the fleshy fibres of the heart.

Section fourth is an account of the arrangement of the brachial fascia, and the formation of the capsular ligament of the shoulder joint.

After having removed the integuments and superficial



fascia from the muscles of the shoulder and arm, what is generally considered as the fascia of the biceps is to be seen ; this fascia affords a sheath to the muscle, as in the case of sterno cleido mastoideus, and sends off a portion to the thorax, where it joins the superficial fascia ; it also continues to the edge of the glenoid cavity, forming all the fibrous part of the capsule of the shoulder joint.

This formation of the shoulder joint by the brachial fascia is so extremely interesting, that we shall give our author's description.

“ To render the demonstration still more conclusive, cut through the deltoid muscle transversely, immediately over the shoulder joint, being careful not to injure the subjacent fascia. Having cleared away the deltoid from about the joint, we return to the outer portion of the fascia, where it covers the biceps, there we find the fascia continuing over the inside of the arm to the triceps, as before stated, and dissecting up this stronger portion, we shall be surprised and pleased to see how distinctly it runs up to the edge of the glenoid cavity, and under the scapular portion of the deltoid, forming the whole of the capsular ligament. When the fascia is laid open, we have a beautiful view of the reflection of the synovial membrane, and are thoroughly satisfied that there is *no distinct or independent capsular ligament*, but that this fascia forms the whole of what has hitherto been so called.”

Section fifth treats of the arrangement of the fascia lata. This is minute and particular, we shall not therefore attempt to analyze it. The manner in which the fascia sends portions to afford sheaths to the muscles and blood-vessels is strikingly similar to what occurs in the neck and upper extremities. As we have before observed, the study of these fascia may appear difficult from mere description, but when examined on the body, the whole becomes obvious, and of easy comprehension. The influence these fasciæ must exercise, in many surgical diseases, must strike every one who is thoroughly acquainted with their extent and connexions.

In the sixth section, Dr. Godman gives a long and interesting account of the arrangement of the fascia interna

abdominis, and the formation of the capsular ligament of the hip joint from the fascia lata. The fascia interna abdominis, as it is termed by Dr. Godman, lines the whole cavity of the abdomen, different parts of it are well known, under various names, as *transversalis*, *iliaca*, &c. to attempt to follow our author in his description of it, would be to transcribe the whole section. One important fact we cannot, however, forbear noticing, that dissection clearly shows that this fascia is perfectly continuous with the fascia lata.

The fascia lata and the fascia interna form the capsule of the head of the thigh bone, in a manner analogous to the formation of the glenoid capsule by the brachial fascia, by the aggregation of the various layers sheathing the muscles of the thigh.

From all the observations of Dr. Godman, we conclude that there are *three* great fascia in the body, the *fascia superficialis*, *fascia lata*, and *fascia interna abdominis*, all of which, at certain points, are continuous; and from these all other fascia are formed, or are processes. The temporal, palmar, and plantar aponeuroses are the only ones not sent off from them.

We have been compelled to do little more than notice the extremely interesting discoveries that Dr. Godman thus details. His descriptions are so exact, that, in attempting to condense them, we feel conscious that we may be unintelligible to those with whom these parts are not perfectly familiar. From having had an opportunity of seeing them frequently displayed, we feel perfectly satisfied of the fidelity of the accounts our author lays before the public.

The remainder of the work consists of a series of papers on irregularities of structure, morbid anatomy, &c. in which are detailed some extraordinary departures from the usual conformation of parts. Among those enumerated, is that of the muscle of the thyroid gland, of which so many instances were found last winter, that it should scarcely be considered as an aberration from nature.

Dr. Godman also gives a short account, accompanied by an excellent plate, of that long contested membrane, the hymen. He sets the matter at rest, that such a membrane does sometimes exist: but, as he observes, its existence or non-existence is of itself no proof of virginity. This point is now almost established as an axiom in medical jurisprudence. From its nature and position it may be destroyed by so many accidents, that its non-existence is not considered as proof positive of a coitus having taken place; added to which, we have many instances on record, of impregnation having occurred, where this membrane remained entire.

In concluding, we thank our author for what he has already accomplished; but much as has been done, there still remains a wide field open for future investigations. We are happy to learn that he intends to devote his attention, during the ensuing winter, to the further prosecution of his interesting labours.

The work bears the marks of having been rapidly composed; but in general is written in a happy style. It is clear and perspicuous; and, as regards the truth of our author's statement, we cannot forbear quoting his own words. "With a full assurance, that a repetition of these dissections will convince the most prejudiced, they are offered to the professional world, and we await, with pleasure, the decision of those who examine for themselves. Those who *do not examine* have *no right* to offer any decision, whatever notions they may entertain."

G. E. R.



ART. XIV. *A Compendious System of Midwifery, chiefly designed to facilitate the Inquiries of those who may be pursuing this Branch of Study, illustrated by occasional Cases; with thirteen Engravings.* By W. P. DEWEES, M. D. &c. 1 vol. 8vo. pp. 608. Philadelphia. H. C. Carey and I. Lea.

AT the time we offered to our readers a review of Dr. Dewees's "Essays on various Subjects connected with Midwifery," we little expected we should, so soon, be able to present the analysis of another work from the pen of the same distinguished writer. In this, however, we are happy to have been so agreeably surprised, and shall always welcome any production of his on the subject of midwifery. Few works, we are convinced, could prove more acceptable to the American student, or to the accoucheur in general, than the one now before us, since, with the exception of Baudelocque, they were not in possession of any sufficiently extensive treatise on the mechanism of labour—which undoubtedly ought to constitute one of the principal parts of the accoucheur's study. Granting this, we are confident we shall encounter no contradiction, when we maintain, that no one in this city, and we might perhaps say, on this continent, could be found better prepared to furnish a system on this particular branch of the medical art. His vast experience, consummate skill, and excellent judgment, fitted him admirably for undertaking this important and difficult task; and we are not afraid to assert, that the medical public will not in the least be disappointed in the high expectations they may form of the execution.

In the introduction to the work, our author has endeavoured to refute the opinion of those, who, declaring labour to be a natural act, maintain that it does not require the interference of art, either for its promotion or accomplishment; and consequently, that when this becomes necessary, it only forms an exception to the rule. We think he has satisfactorily shown the absurdity of such an opinion, and proved that, arising from ignorance, it has led into

error, such as have acted in accordance with it in practice. They have been thereby induced to lay too exclusive a reliance on the powers of nature to overcome every obstacle connected with parturition.

“ Were the constitutional powers of the system, the physical conformation of the pelvis, and the size of the child's head, always and undeviatingly the same; were the most favourable presentation of the child, the best construction, and the most healthy play of the powers concerned in this operation, never to be assailed by accident, or complicated by disease—the opinions of those who contend for the supremacy of unassisted nature, would deserve much, and perhaps exclusive attention. But, as it is but too well known, that this never has nor never can be the case, we must insist, that the powers of nature have their limits, and that the interference of art becomes absolutely necessary.”

Yet Dr. Dewees is too good a practitioner, to advocate the indiscriminate interference of art during the progress of a healthy labour. He merely insists, that nature is not competent to all emergencies, and that by the judicious and skilful assistance of the accoucheur, the sufferings of the patient may be considerably abridged.

“ If this, then, be true in the most healthy or practicable labours, how much more important does the judicious and timely application of adventitious aid become, when it is well known, that the deviations from healthy power and structure are almost constant in their occurrence, and almost infinite in their variety. It is these aberrations that emphatically declare midwifery to be a science—for it has and must have its own principles; principles, that must not only be known in the abstract, but constantly employed; and it is the happy application of the fundamental rules of this science, that makes one practitioner superior to another.”

He further justly observes, that if there exists a difference in the skill of practitioners; it can only arise from a more perfect acquaintance with the rules which should govern their conduct, the extent of their experience, and the justness of deductions made from the facts that fall under their notice. But, as we could not fail to expect, from so judicious an observer, he entertains the opinion, that experience, however necessary and important it may be, is not

alone sufficient; that a correct foundation must be laid by the study of first principles; and that with even this preparation, the progress is slow, as variety in labour is so multiplied. It is only by a happy generalization, he says, that we can arrive at principle, and only by the correct exercise of these, that he can be extensively useful. The succeeding pages of the introduction are devoted to show the absolute necessity of fundamental principles, and the empiricism, with which the merely *experienced* practitioner acts when destitute of them. We recommend the attentive perusal of this portion of the work to those engaged in the study of midwifery; and who feel interested in the successful cultivation of that art—since, of the various essays on the subject which we have seen, it is the best calculated to defend it victoriously against the sneers and cavils of the blind confiders in nature.

“In making our estimate of the value of experience alone, we must admit, that many pursue the safer plan in exclusively submitting the case to nature; for we are free to confess, that she, in many cases of desperate appearances, successfully surmounts the difficulties that on all sides menace her: but this is only submitting to a choice of evils; while the well instructed practitioner would be able to triumph successfully over them, and spare nature the hazardous conflict. That in many instances we are, and should be, but the silent observers of nature's endeavours, we unhesitatingly acknowledge; but we must insist, and we are persuaded in this we shall be supported by every well instructed accoucheur, that it requires no less judgment to determine when we should be so, than when it is proper to aid her, or to take the business entirely out of her hands.”

In entering on his subject, our author presents a clear and concise description of the bones composing the pelvis, on a knowledge of which he very properly lays considerable stress; and next offers his views respecting the separation of these bones. This, he remarks, may take place in various degrees; from a simple relaxation of the connecting media, to an absolute separation. He regards it, however, as a disease of rare occurrence, having never met with more than one decided case of the kind in the course of his long and extensive practice. Differing in opinion



with Pineau and Paré of old, and Gardieu in our own times, he places little faith in the frequent recurrence of this separation, and of its being a contrivance of nature to render labour more easy and safe, by widening the diameter of the pelvis. Against the existence of this relaxation, he has adduced many excellent arguments, derived principally from the fact, that dissections of women, who had died during or immediately after labour, have not exhibited such a separation of the symphysis—that it is not more common in distorted pelves, although, agreeably to the common belief, it ought to be more frequently met with in them—that it would not be adequate to the end proposed, since it requires a separation of one inch of the symphysis, to widen the diameters one line—and that when it does take place, even in a slight degree, it invariably causes temporary or permanent inconvenience, and when extensive, the most serious evils, and even death.

Omitting the enumeration of the causes assigned for this accident, and referring for the symptoms of its different degrees, and the mode of treatment proposed, to the work itself, we proceed to notice the subject of deformity of the pelvis, which next occurs. He remarks that deviations from the standard measurements of the pelvis, are very numerous, and that any detail of them, even were it useful, would be impossible.

“Deformities of the pelvis consist, first, in an excess of size in the diameters of this cavity—and, secondly, in a defect of it. The first presents scarcely any obstacle that is not surmountable by common means—as a precipitation of the uterus within the pelvis during gestation is the chief evil—occasioning some inconvenience or embarrassment to the flow of urine, the alvine discharges, and the locomotion of the woman—during parturition, a too rapid labour, threatening the escape of the uterus with its contents, from the os externum—and after the birth of the child, giving rise to a profuse and alarming hemorrhage, by the sudden emptying of the uterus, from the sudden expulsion of its contents.

“The first of these inconveniences may be remedied by the application of a proper sized pessary—the second may be in a great measure prevented by a judicious management of the case: 1. By forbidding the woman to bear down during a pain.

2. By opposing the too rapid transit of the child, by pressing firmly against it with the fingers within the vagina, if the uterus be but in part dilated, so as in some measure to counteract the influence of the pains—and if it be fully dilated, by making a firm pressure against the perineum with the extended hand, so as to allow of the more gradual escape of the head. The third may be at least very much diminished, by brisk frictions being instituted upon the abdomen immediately over the uterus—by a proper management of the placenta, and by the immediate exhibition of twenty grains of the powdered *secale cornutum*."

As to the cause of deformity of the pelvis, he observes that it is rachitis in infancy and childhood, and malacosteon in the more advanced periods of life. He says that the former of these diseases prevents the proper consolidation of the bones, and thus exposes them to the influence of any pressure that they may be subjected to during its continuance. He explains the manner in which the effect takes place, and states that it very rarely happens every part of the pelvis is equally affected by this disease, and that when it is not, the consequences will be different, both in degree and in location.

As we cannot go as minutely into this subject as its importance demands, and fearing that to offer a few extracts from the work before us, would be doing injustice, we must refer our readers to the work itself, firmly persuaded that they will derive a large share of useful information, from an attentive study of the whole section. Yet, before we take leave of the subject of deformed pelvis, we must be allowed to quote the following passage, as particularly meriting the attention of accoucheurs—premising that the opinion he advances, is found from personal experience, and a careful examination of the best European writers on this subject.

"As every degree of deviation does not render labour impracticable by the natural agents of delivery at full time, it will be well to set the boundary which the practitioners of Europe, of the greatest experience, have affixed for it—and it seems to be pretty generally conceded, that a labour cannot, successfully to the child, be effected, when there is less than three inches in the antero-posterior diameter of the superior strait. When a

pelvis has three inches, or even three inches and a half in this diameter. the labour is rendered, for the most part, tedious, painful, and uncertain. We hear of some remarkable cases, however, of children being born alive, when there has been but two inches and three quarters from the pubes to the sacrum—but these must constantly be regarded as exceptions to the general rule, and require, that it may take place, an unusual suppleness in the bones of the cranium.”

In his observations on the examination of the pelvis, which succeed, he remarks that the pelvimetre of Contouli is liable to serious objections, and seems to agree with Baudelocque in opinion, respecting the advantages of the calliper in measuring the diameter of the pelvis. He further observes that we may determine with considerable accuracy the antero posterior diameter, “by the introduction of the finger into the vagina, and placing its extremity against the most projecting part of the base of the sacrum, and allowing the radial edge of it to press against the arch of the pubes—mark, then, the part of the finger which is immediately below the symphysis by the nail of the finger of the other hand, and ascertain the distance between it and its extremity, and it will very faithfully give the width of the small diameter of the upper strait—it must, however, be recollected, that a little allowance must be made for the oblique manner in which the finger descends from the sacrum to the symphysis of the pubes.”

Chapter second treats of the child's head, the various diameters of which, our author observes, should be accurately known, in order to understand well the mechanism of labour. The principal diameters that must be considered, are—1st. the oblique, running from the symphysis of the chin, to the posterior extremity of the sagittal suture—2d. the longitudinal or large diameter, running from the centre of the forehead to the top of the occiput—3d. the perpendicular, running from the summit of the head to the base of the cranium—4th. the transversal, or small diameter, which extends from one parietal protuberance to the other. Next follows a description of the child's head, its sutures and fontanelles, on all which our author lays the greatest



and most just stress—recommending their study to the young practitioner of midwifery, by early accustoming himself to touch and distinguish them.

“It will lead him with certainty to the situation of the head, as regards the pelvis, and constantly and instantly apprise him of any departure from the best position, and thus enable him to take advantage, at a proper time, to effect any necessary change upon it, with a view to render the labour safer, easier, and of more speedy termination. No man can with any certainty render assistance, where the head has departed from its proper route, who shall be incapable of distinguishing by the touch this aberration—he will either not distinguish the faulty position, and thus condemn the poor woman to protracted and unnecessary suffering, or he will blindly and rashly attempt relief, to the hazard of the lives of mother and child.

“Many rely upon the position of the ear, for the knowledge of the situation of the head—but we very loudly object to this test: 1st. Because it may be so high in the pelvis, as to be out of reach of the finger—2d. It may be so impacted in the pelvis as to prevent the finger from passing to it—3d. That, when felt, it may give, from some peculiarity of situation, a wrong impression of its position—4th. That when the head is still inclosed within the uterus, the finger cannot be always made to pass under the edge of it sufficiently far to reach it, though the os uteri is sufficiently dilated for all the purposes of delivery.”

In chapter third, we find a description of the external and internal organs of generation, and some speculations on the minute anatomy and the physiology of some of the parts composing this wonderful apparatus. The limits to which we are naturally restricted not allowing us to enter into an examination of our author's views on these various interesting points, we again refer to the present work, and to his former writings, and proceed to offer a few remarks on the succeeding chapter, on the menses. Most of the readers of this Journal are already acquainted with the opinion our author entertains, respecting the manner in which this fluid is formed. We have, in our analysis of his “Essays on various subjects connected with Midwifery,” detailed some of the arguments he alleges in favour of the theory by which the formation of this fluid is referred to a secretory

action in the vessels of the uterus—we shall therefore not repeat them here. After defining the menses, stating the periods of life at which it generally first appears, and ceases, showing the irregularities to which it is subjected in different individuals, he says,

“We have known several instances, where the eruption of the menses was constantly preceded by strong hysterical paroxysms, of greater or less permanency—the menses would now appear, and instantly the system would be tranquillized, and the woman return to her ordinary state of health. One case we knew where a severe pruritus accompanied this convulsive state, to the great annoyance of the poor young creature who was the subject of it.”

He remarks that from the earliest records of medicine to the present day, the ingenuity of the medical philosopher has been exercised to point out the efficient cause of this peculiar habit of the human female. He therefore passes in review the various hypotheses which have been invented for this purpose. The first of them which he notices is that of lunar influence. Of this theory which was so early advocated, he remarks, that although not exploded, it is destroyed by the fact that there are women menstruating every day of the year, and every hour of the day. Nor does he allow much credit to the doctrine of general plethora, as inculcated by Galen, although he concedes to it a more decided claim to our attention than the preceding hypothesis, on account of its greater ingenuity and plausibility. With the ingenious doctrine of topical congestion, taught by the celebrated Dr. Cullen, he does not seem to be well satisfied, and advances against it not a few arguments, which every candid reader must, we believe, consider as unanswerable. He concludes this section of the work by observing, that

“From what has been just said, it would appear, that hitherto nothing satisfactory has been advanced upon this curious subject—it yet remains for some future Haller or Hunter to enrich medical science with a rational explanation of it.”

The final end of menstruation, he observes, is now, and will, perhaps, remain enveloped in obscurity. But he regards it as an incontrovertible fact, that the healthy performance of this

function is in some way or other connected with impregnation—as no well attested instance is yet upon record, where this has taken place in a female who never had had this discharge, and even when it was not eliminated of a healthy character, and with a greater or less degree of regularity. He considers it as probable, that in those rare instances in which women have never menstruated, there existed some imperfection in the genital organs.

“It may be asked,” he inquires, “why are the menses in the human female coloured? This may be difficult to answer satisfactorily—but we are of opinion, that one of its uses is to advertise the female when this discharge is arrested, that impregnation has taken place, and thus enable her to make the necessary arrangements for the period of becoming a mother. Had this discharge not been coloured, it might readily be mistaken for an increase of the secretion, natural to the uterus and vagina—but being coloured, this error could not well take place.”

Chapter fifth contains observations on conception. It is composed of several sections—the first, on the changes produced by conception—the second, on the membranes—the third on the placenta—fourth, on the fœtal circulation—fifth, on the changes in the uterus by impregnation.

In our review of his Essays we took occasion to present to our readers his opinion concerning the manner in which conception takes place, and also the hypothesis of the seminal absorbents, which seems to have received confirmation from the anatomical physiological researches of Gärtner, of Copenhagen, and some of the continental physicians. Upon the whole, we regard this theory as plausible as any of its predecessors, or contemporaries, and unite in sentiment with those who maintain that in whatever way the semen gets to the ovaries, its presence there is absolutely necessary to impregnation. We cannot stop to notice minutely the other sections of this chapter, as we must suppose the greater number of the readers of this Journal, already acquainted with the subjects of which they treat. We consequently recommend them to the student of midwifery, as



containing a concise and clear account of all that is known, or worth knowing, on the subject.

The succeeding chapter treats of the action of the uterus. This he divides into the tonic and alternate. The first is performed by all the fibres of the uterus gathering themselves up towards a common centre—but more especially by the circular fibres.

“The tonic action of the uterus can be exerted in various degrees, as it may possess its inherent powers in a greater or less state of perfection—it can exist under the following conditions and varieties: 1st. It may act with the most perfect uniformity and success for the purposes for which it was intended. 2d. It may be impaired so as to act transitorily and feebly. 3d. It may act with force at one moment, and cease the next. 4th. It may act partially, that is, the fundus may contract, and the body and neck be flaccid; the body may contract, and fundus and neck be relaxed; the neck may contract, and the body and fundus be in a state of atony; the body and fundus may contract, and the mouth be relaxed: when these occur, different phenomena present themselves, as shall be noticed when on the subject of uterine hemorrhage.”

The alternate or spasmodic contraction would appear to be nothing more than a sudden and exalted degree of the tonic contraction. It is for the most part accompanied by pain, which arises from some morbid or altered condition of the muscular fibres composing the uterus. It manifests itself but under the single circumstance of attempting to expel something from the uterine cavity, and is always the effect of stimuli, or mechanical irritation: hence it appears during labour and abortion, or in the form of after-pain, to expel coagula or other foreign substances. The opinion of our author respecting the unnecessariness of pain, has already been explained in a former number of this Journal, as well as his supposition of the effect of civilization and refinement in entailing these cruel sufferings on the parturient woman.

“So far as we can determine the point, it would seem, that the longitudinal fibres of the body in general, and those of the uterus in particular, have more especially felt the influence of the causes just mentioned—for man is said to have lost much

of his original vigour and strength, and women suffer from child-bearing, while the circular muscles, and sphincters, seem to have lost nothing of their primitive power—thus the heart and intestines have parted perhaps with none of the original vigour with which, from the beginning of the world, they were endowed—nor have the several sphincters, among which the orifice of the uterus may be justly reckoned, suffered from constitutional abuses.

“In the uterus in particular, we may observe pretty nearly the same thing—for we hold it more than probable, that the circular fibres of this organ have not deteriorated in the same degree as the longitudinal, nor subject precisely to the same penalty, since they may contract with great force, without the production of pain. We see this well and satisfactorily illustrated in that condition of the body of the uterus, called the hour-glass contraction. This state may continue for hours, without pain being a consequence.”

In chapter seventh we find observations on the important subject of displacement of the uterus. The causes enumerated are the impulses this viscus receives from the abdominal viscera—pressure of the distended bladder—loaded rectum, or sigmoid flexion of the colon—and the proper weight of the uterus after conception. The first displacement of the uterus which he notices, is the sinking of that viscus in the cavity of the pelvis.

“The latter of the causes just enumerated, very often sinks it so low in the pelvis, as to make it completely occupy the vagina, and it sometimes has even a disposition to escape from the os externum—this subjects the woman to certain inconveniences, when excessive, but to none when moderate, except perhaps a sensation as if something was desirous to escape from the vagina, when in an erect posture, but is instantly almost relieved, when she disposes herself in a horizontal position. When more excessive, it creates embarrassments to the flow of urine, and the discharge of fæces. These inconveniences rarely require medical interference—as it, after a short time, relieves itself, by acquiring sufficient bulk to rise out of the brim of the pelvis, and be supported by it. When interference is required, the application of a proper pessary is all that is necessary.”

Retroversion of the uterus is next called to the attention of the reader. But we shall be content with referring to a

masterly essay on this subject, published by our author in one of the early numbers of this Journal.

The obliquities of the uterus, which occupy him in the following section, he very properly thinks, give rise to inconveniency sufficiently serious to merit an exposition of their mechanism. He divides them into three kinds—1st. the right lateral—2d. the anterior—3d. the left lateral. In the first, the fundus of the uterus is found more or less inclined to the right portion of the abdomen, and its length and departure from a vertical line can readily be detected by the hand placed upon it—and when considerable, it may be discovered by the eye. It is the most frequent species, owing to the manner in which the rectum descends in the hollow of the sacrum, and the round projection offered by the salient portion of the sacrum.

In the anterior obliquity the fundus continues to advance in the direction it received when passing through the superior strait. It is of rare occurrence in a first pregnancy, owing to the firmness of the abdominal parietes, and very frequently met with in subsequent ones. Its extent is sometimes incredible, especially in little women who are much upon their feet, and in those who have a deformity of pelvis.

The third, or left lateral obliquity, is so rare as to scarcely merit a mention, and especially as the inconveniences arising from it, must be nearly the same as from the right lateral one.

The rules laid down by our author, for the conduct of the practitioner in cases of obliquity of the uterus, are so judicious that we shall make no apology for offering a few extracts from them. In the right lateral obliquity, he says,

“Placing the woman upon her left side, will very frequently be all that is required—but should this position not bring the os uteri to the axis of the pelvis, we must aid it by the introduction of a finger within it, when it is either well dilated, or easily dilatable, and in the *absence of pain*, gently draw it towards the symphysis pubes, and retain it there until a pain ensue—should the contraction of the mouth of the uterus offer much opposition to the force which would retain it at the symphysis



as just mentioned, we should gradually yield to it, but not withdraw the finger—when relaxation has taken place, we again conduct the os uteri to the place before indicated, and maintain its position there, unless again forced to relax our effort for the reason just stated—in this manner we alternately retract and relax, until we establish a correspondence between the axes of the fundus, mouth of the uterus, and the pelvis; when this is accomplished, we shall find the labour will advance with more rapidity, as well as be less painful.”

In the anterior obliquity the same indication of procuring a proper relation between the axis of the uterus and the pelvis, presents itself; but it is difficult to fulfil.

“In this case we place the woman upon her back, and at the time and under the circumstances pointed out above, we, with the point of the finger, search for the os uteri towards the projection of the sacrum. In cases of extreme obliquity, it is oftentimes difficult to reach the os uteri by the ordinary mode of examination—when this happens, the pendulous belly should be raised and supported by an assistant with a view to depress the os uteri—should this not succeed, and should the pains be brisk, the head will be found to sink lower and lower in the pelvis, covered by the stretched anterior portion of the uterus. If advantage be not now taken to introduce the hand to restore the os uteri to the proper axis of the pelvis much suffering must be endured, and much risk incurred by permitting the head to descend covered by the uterus.

“Whenever it is found that the os uteri cannot be reached by a well directed search in the ordinary way, we must introduce the hand well lubricated, so that its palm may be next to the distended uterus—a finger should then be made to reach up to the neighbourhood of the projection of the sacrum, where, on some one portion of the uterine globe, the os uteri will be detected—when discovered, we should hook it upon the point of the finger, (provided it is either dilated, or easily dilatable,) and draw it towards the centre of the inferior strait—when it has followed so far, the hand may be gently withdrawn, (but not the finger in the os uteri,) and the uterus detained there until the proper direction of the forces, and the axis of the uterus, are made to correspond. By this simple proceeding, much time and suffering are saved—and in some instances we are well persuaded that much risk is prevented.”

The subject which engages our author in the succeeding chapter, (eighth,) consists in the signs which usually accompany pregnancy. Those are many, and he treats of each

of them under their respective heads. They are, interruption of the menstruous discharge—nausea and vomiting—enlargement of the mammæ—areola—formation of milk—enlargement of the abdomen—increased size of the uterus—pouting out of the navel—spitting of frothy saliva—quickening—vomiting—heart burn—salivation—fluor albus—pruritus.

“Although almost every pregnancy has the whole or a greater part of the signs we have just enumerated—yet their union may not, in an individual case, so positively insure pregnancy as to be free from all doubt, where the subject may become an object of judicial proceeding—and where life, character, or property may be involved in the consideration.”

With respect to the first of these symptoms, Dr. Dewees thinks that although the suppression of the menses in a married woman, or in one who has had illicit connexion with a man, may, from this circumstance justly give rise to the suspicion that impregnation has taken place; and although as a general sign, may safely be looked upon as one of the most unequivocal that present themselves—

“Yet a variety of causes, independently of pregnancy, may operate to this end, both in the married and in the unmarried woman: 1st. Exposure to cold and damp, at the time they are about to appear, or immediately after they have shown themselves. 2d. Certain chronic affections, as phthisis pulmonalis, scirrhus liver, or other visceral obstructions. 3d. The operation of certain powerfully depressing passions or emotions of the mind. And lastly, some imperfection in either the ovaries or the uterus itself.”

Our author is likewise of opinion that the presence of the menses does not insure an exemption from pregnancy. He enters into a long refutation of Dr. Denman's ideas on this subject, and supports his opinion by facts, appealing at the same time to the testimony of not a few of the best authorities in medicine. The second and third signs, Dr. Dewees regards as very equivocal—and he remarks that the same may be said of the areola in any but the first pregnancy. In this latter case, however, did this sign present itself, he should place great dependence upon it, having, hitherto,

never been deceived by it. Our author recommends the greatest care in conducting this inquiry.

"For when the nipples are to be examined, the woman should open her bosom in such a manner as to expose the whole breast, and must not be suffered to draw it above the margin of her clothes by placing her hand beneath it—in doing this the nipple oftentimes is irritated by the pressure of the fingers, which gives a new character to the appearances. We have, in a number of instances, detected pregnancy by this examination, where the patients insisted their irregularity proceeded from cold or other causes. It must, however, be remembered, that the absence of these areolæ would not prove the woman not to be pregnant."

The formation of milk in the mammæ, is looked upon by the vulgar as a certain sign of pregnancy—but Dr. D. has oftentimes known this fluid, (or at least one bearing all the marks of the first formed milk,) plentifully secreted without pregnancy, merely by the interruption of the menses.

"The enlargement of the abdomen, perhaps, is one of the most equivocal of the enumerated signs, since it may take place from a variety of causes—1st. Dropsical affections, of either the abdomen or uterus, or ovaries—2d. From a chronic disease of the ovarium or uterus itself—3d. From a retention of the menses, from some accidental cause preventing their flow—4th. Enlargement of almost any of the abdominal viscera—5th. From the simple obstruction of the catamenia. For these reasons but little reliance can be placed upon this circumstance alone, or even when combined with several others."

Nor does he regard the increased size of the uterus as an infallible sign of pregnancy, as it may arise from

"1st. A dropsical state of the uterus—2d. From disease within its cavity, as tumours or excrescences—3d. From moles or false conceptions—4th. From a detention of the menstruous discharge from the occlusion of the os tincæ, &c. The case of Miss F. is strictly in point—and is one, among many others, where injurious surmises have most cruelly been entertained for a long time."

The pouting out of the navel, unless accompanied by other signs of pregnancy, does not point out infallibly this state; for it may arise from numerous other causes.

"Spitting very white frothy mucous, is by no means a constant attendant upon pregnancy—but when it does occur, it



very certainly points out this condition. This saliva is very tenacious, and very difficult to deliver from the mouth—it is extremely white and a little frothy, and when discharged upon the floor, assumes a round shape about the size of a shilling piece: hence the expression here is, that the person is spitting English shillings, or cotton—and so far as we have remarked, it is almost a certain sign of pregnancy.

“Salivation, like the sign just mentioned, is not a constant attendant, except in a very moderate degree, upon pregnancy; indeed it is even more rare, and seldom exists in excess—but when it does happen, it very decidedly points out this condition—we never remember to have observed this symptom from any other state of the uterus.”

In the treatment of that obstinate vomiting which harasses the pregnant woman, a temporary plan is for the most part proper. Warm water—chamomile tea—alkaline medicine, if there exists acidity—a table spoonful of milk every fifteen or twenty minutes, if the vomiting and nausea occur obstinately during the day, are generally sufficient.

“But such is the prevalence of acid, that none of the anti-acids are capable of overcoming it, though administered with a liberal or even daring hand. We rarely persevere in the use of the alkaline remedies, when we find that considerable doses will scarcely have a temporary effect—when this is the case we have recourse to acids themselves for the relief of this most distressing state of stomach. Both vegetable and mineral have been employed by us with about perhaps equal success—but the vegetable will merit the preference in general, on account of the teeth. We have, in several instances, confined patients for days together upon lemon juice and water, with the most decided advantage.”

In heart-burn the alkaline medicines are sometimes employed with success; and in some cases the acids, especially the citric, will be found very beneficial. The following pills Dr. Dewees has found of great advantage, when properly persevered in.

“R. Gum aloes suc. ʒss.

Pulv. Rhæi. ʒi.

Ol. Caryoph. gut. iv.

Sapo. venet. gr. viij.

Syr. Rhæi. q. s.

M. f. pil. xxx.

One of these every night if necessary, or every other night, as may be most eligible or necessary.”

The salivation attending pregnancy, when moderate, will scarcely require attention—but it becomes very distressing and enfeebling when excessive. Dr. Dewees describes an interesting case of this affection in which it began in the second month—

“She discharged daily from one to three quarts of saliva, and was at the same time harassed by incessant nausea and frequent vomitings—so irritable was the stomach, that it rejected almost instantly any thing that was put into it—she now became extremely debilitated, so much so as to be unable to keep out of bed—and when she did attempt to sit up, she would almost instantly faint, if not quickly replaced.”

After using, without success, a variety of remedies, he put his patient

“Upon a strictly animal diet, and ordered ten drops of laudanum morning and evening, and fifteen at bed time: this plan succeeded most perfectly in the course of a few days—nausea and vomiting ceased, and the discharge was reduced to less than a pint per diem—and perhaps the force of habit had no inconsiderable agency in the production of this quantity. The bowels, during this plan, were kept open by the extract of butter nut and rhubarb, in the form of pills. This lady never had any return of this complaint in her subsequent pregnancies.”

Fluor albus is a very frequent attendant upon pregnancy, and seems to be owing to the increased derivation of blood to these parts. In such cases it is always mild. When in excess in pregnancy, it merits the attention of the practitioner, though we must not expect or even attempt its radical cure. The mildest applications and attention to cleanliness are sufficient.

“For this reason we simply direct washing the parts three or four times a day, with luke-warm water, and throwing into the vagina, by means of a small syringe, a weak solution of the acetate of lead: this should not exceed a scruple to eight ounces of water. Previously to using the injection, the parts should be well washed with a weak solution of fine soap in warm water, by throwing up the vagina a few syringes full of it in quick succession, and these followed by the saturnine solution. Much advantage is derived from this plan—for we are convinced it will afford relief, when the neglect of it might not be followed by the smallest benefit.”

Owing to the frequency of leucorrhœa in the unimpregnated state, and the difficulty often experienced in its cure, Dr. Dewees has devoted a few pages to its consideration. We are not prepared to say that the subject is well located here—so far from this, it appears to us that it would have been much more proper to treat leucorrhœa, in conjunction with the other diseases of the unimpregnated woman, in a work expressly destined to that object. Be this, however, as it may, we are happy to be made acquainted with our author's views regarding this interesting malady, whatever the channel may be through which the communication is made.

Dr. Dewees locates the disease, generally, in the vagina, and is of opinion that it is rarely seated in the uterus, than which nothing appears to us more correct.

“We have never been perfectly satisfied but in three or four cases, of the very many that have been under our care, that the discharge in question proceeded from the cavity of the uterus—in these cases the following peculiarities were present in all. 1st. During the night, there was no discharge whatever, but upon rising, there would be a very abundant one of a glairy, tenacious substance, which was sometimes mixed with some of a purulent appearance. 2d. That during the day, when it did escape, its was always suddenly and accompanied by a sensation of effort within, to produce it. 3d. That when a piece of sponge was introduced into the vagina at night, for the sake of determining the point, it was never found filled with the kind of matter that very quickly issued when this was removed. 4th. All these cases were in our hands incurable, though relieved. 5th. All these women were barren.”

He divides the idiopathic forms into three stages, each of which requires a little difference of management. In the first or most simple form, the matter discharged is glairy and transparent, or resembles thin starch. In the second, the matter has a white or yellowish appearance—whilst in the third it is of a green colour, and frequently tinged with blood. Dr. Dewees considers both the last forms as exalted degrees of the former.

His treatment, in all the species, is nearly the same; with the exception of the greater attention paid to the reduction



of the constitutional symptoms and local inflammation in the previous forms. It consists in cleanliness—frequent washings of the parts—evacuants proportioned to the degree of morbid action in the parts—mild astringent injections, and the tincture of cantharides.

“Of this we direct thirty drops every morning, noon, and evening, in a little sugar and water, increasing the dose every third day, five drops at a time, until strangury is produced, unless the disease is arrested, which is not unfrequently the case before this symptom appears. Should the complaint withstand the first strangury, we are not discouraged, but recommence the tincture at the original dose of thirty drops, and increase it as before, until a difficulty in making water is again experienced—it rarely, however, withstands the second irritation of the bladder.”

For many practical details we are compelled to refer to the book itself, as want of room prevents us from extracting as freely as would be necessary to convey all the views of our author on this interesting subject.

The pruritus, or itching of the pudendum, is certainly one of the most troublesome and distressing complaints to which the female is subject. An examination of the parts, in one case, revealed to our author the true nature of this complaint; for “upon separating the labia, the whole face of the vulva, the os externum, and as far in the vagina as could be viewed, was covered with an incrustation of apthæ.” Led by the analogy which this complaint bore to the thrush of children, Dr. Dewees made trial of a wash composed of a strong solution of borax; and its uniform success since, has led him to believe that it is nearly a certain remedy in this distressing affection.

In the ninth chapter our author presents an excellent account of the causes, symptoms, and mode of treatment of prolapsus uteri. This is undoubtedly a frequent and troublesome affection among women in certain districts of our country, and is well deserving of the particular attention of our practitioners. Influenced by this fact, we earnestly recommend an attentive perusal of the chapter before us, to those who are engaged in the study or treatment of the

diseases of women. We especially direct their attention to the pessary proposed by Dr. Dewees, as from trial in some cases we have found it as good, if not superior to any hitherto in use.

The next subject which the author notices is deranged menstruation. He successively treats, 1st. Of the too tardy appearance of this discharge. 2d. Of its interruption after being established, commonly called suppression of the menses. 3d. Its excess of quantity. 4th. Its painful production. 5th. Its irregularities before the decline of life. After some general remarks on the usual periods of life when the menses appear—the opinion of old women on the necessity of this discharge—Dr. Dewees remarks,

“That there seems to be four conditions of the female system, in which the menses are tardy in their appearances: *a*. Where there is no development of the genital organs—*b*. or where it is taking place very slowly—*c*. where this development is interrupted by some chronic affection of some other part—*d*. where the most perfect development has taken place, but they do not make their appearance. The management of these different situations, is different in each—we shall therefore treat of them in order.”

In the treatment of the first condition we should use a temporizing plan, and by the administration of some entirely inert medicine, gain time, and save the poor child from ill health, or an untimely grave.

All our exertions in favour of such patients as labour under the condition *b*. should turn to the invigoration of the system in general, and the development of the uterine system in particular. The first should be attempted by the establishment of a regular course of exercise—by proper attention to dress—by a diet of easily digested substances, both of the animal and vegetable kind. The second indication is fulfilled by such medicines as appear to have a direct or indirect action upon the uterus itself. Of the former, Dr. Dewees recommends the tincture of cantharides, especially when leucorrhœa is an attendant. Of the indirect kind, he attributes great efficacy to the aloes, given in small and repeated doses.

In the treatment of the condition *c.* we must direct our remedies to the removal of the diseases that give rise to the interruption. And in the condition *d.* the tincture of cantharides, if given steadily for two or three weeks, will rarely fail to produce the discharge ; or the madder, in strong decoction, may be administered, especially if the return of the pain usually attending be near at hand.

The succeeding sections of this chapter are in every respect entitled to attention—indeed, we may safely say, without passing the limits of truth, that we do not recollect to have seen this subject treated with more ability. We must, therefore, particularly recommend the study of this chapter to every practitioner. All that our limits will permit us to do at present, is to recall to the memory of our readers, the reliance which our author places, in cases of suppression or painful discharge of the menses, in the tincture of guaiacum, prepared agreeably to the formula contained in our review of his *Essays*.

The succeeding chapters are devoted to the consideration of the term of utero-gestation, and of labour. In the latter the symptoms of labour are well described and explained. They are divided into those that affect the system at large, as rigors, and a train of what is usually denominated nervous symptoms. Secondly, into those which affect certain portions of the uterine system ; as frequent inclination to make water, or suppression of it, and tenesmus. Thirdly, into those which affect the uterine system in particular ; as subsiding of the uterine globe—secretion of mucous—the dilatation of the mouth of the uterus—and its alternate contractions.

“These rigors,” he observes, “would seem connected in some way or other with the dilatation of the os uteri ; and we think we have observed them most frequently where this was rapidly performed—and we do not recollect an instance of this taking place where the os uteri was not more or less dilated.”

“When it has taken place later in the process, we have always felt assured that the mouth of the uterus was dilating or dilated. It sometimes occurs after the labour is finished—it is never, so far as we have witnessed, attended by the sensation



of cold. We have never seen it do the slightest injury, though the patient and her friends are oftentimes much alarmed by it; and sometimes makes them commit an error by giving her stimulating or heating drinks—we believe it never requires any attention."

The frequent inclination to make water needs no application, unless it cannot be obeyed, and amounts to a suppression—in such cases the catheter must be had recourse to.

"It should ever be a rule to inquire frequently into the state of the bladder in all cases of tedious labour—and, should the patient have been several consecutive hours without passing it, the catheter should be employed, and especially if there be no prospect of the labour being speedily terminated. Much present inconvenience, and sometimes lasting mischief, has arisen from neglect of this precaution—we have seen an entire suppression remain for days, and only relieved by the occasional use of the catheter—we have known an opening to take place between the urethra and the vagina by a slough, the consequence of long pressure—and witnessed an incontinency of urine from the same cause."

The affections of the uterine system in particular, are divided into, 1st, the subsiding of the abdominal tumour—2d, the secretion of mucus—3d, the dilatation of the os uteri—4th, the alternate contractions of the uterus. Each of these subjects occupies our author in turn, and is treated in a judicious manner. Speaking of the dilatation of the os uteri, Dr. Dewees says,

"All the writers on midwifery, so far as we are acquainted with them, make this important operation the effect of mechanical impulse, though many of them, at the same time, are forced to acknowledge that they have seen it dilate where neither the distended membranes, nor any portion of the child had entered its circle to operate its motion by a wedge-like action."

The explanation he offers of this phenomenon is different from the one just mentioned, and in order to convey more effectually his views on the subject, he enters into a consideration of the various contractions which belong to the uterus. They are, 1st, the contraction of the longitudinal fibres of this organ—2d, the contraction of the circular fibres—3d, the simple contraction—4th, the compound con-

traction—5th, the effects of the tonic contraction—6th, the cause and effects of the spasmodic or alternate contraction.

It is especially in the chapter containing the rules that must guide the accoucheur in his conduct during labour, that the utility derived from the publication of the present volume, is made evident. No where, we believe, shall we find so many excellent advices and remarks on a subject too often overlooked in systematic works on midwifery, and with which young practitioners should be familiar before entering on the difficult duties of the profession of obstetrics. There is, perhaps, no situation more embarrassing than that of the young accoucheur when placcd at the bed side of the parturient woman, and unless he be well grounded before hand in all the necessary details, he will find himself often much puzzled in respect to the manner in which he must act. Not the least of the claims of Dr. Dewees, therefore, to our thanks, consists in his offering a minute account of all that must be done under these trying situations, and we accordingly hope that no student of midwifery will neglect to make himself master of all the directions given by our author, by a diligent perusal of the work before us.

He is of opinion, that after-pains are produced "by the renewal of the alternate contractions of the uterus, in consequence of coagula forming, from time to time, within the cavity, which, as they are foreign bodies, it is obliged to expel." This is precisely the view taken of the subject by Antoine Petit, as may be seen by a reference to his work, entitled, "*Maladies des Femmes enceintes*." We are ready to concede that, in the generality of cases, such is the true explanation of this affection; but, at the same time, we must be permitted to maintain, that in some instances after-pains are produced by a remnant of spasmodic pain in the uterus, and are totally independent of the presence of coagula. This we have seen in several cases, and it explains, much better than any other theory, those circumstances mentioned by our author, in which there is an almost uniform renewal of pain, upon the application of the child to the breast, if they have been suspended for hours

and the aggravation of them if they have not been controlled. Be this, however, as it may, our author, has derived great benefit from camphor, and thinks it decidedly superior to opium in this complaint.

“ We have met with a few cases of a very distressing kind, which we have never seen noticed by any writer we have met with. It is a most severe and constant pain at the very extremity of the sacrum and coccyx ; it begins the instant the child is born ; and perseveres with most agonizing severity, until its violence is overcome by the rapid and liberal use of camphor and opium. It is declared to be by the patient, infinitely more insupportable than any pains of labour ; for it is never ceasing.”

The direction about the proper regimen during the month—the lochia, and its excessive discharge, are laid down in a judicious manner, as well as the attentions necessary to be paid to the child ; such as the washing—dressing of the navel—purging of the meconium : and also the section on the suppression of the urine—food of the child—apthæ—colic—ophthalmia—and ulceration of the mouth. Want of room, however, will prevent us from enlarging much on these several subjects. Apthæ, or baby sore mouth, is a very distressing complaint, which in some cases has proved fatal. Dr. Dewees has presented us a faithful description of its symptoms, and shown its connection with a derangement of the alimentary canal.

“ The treatment of this disease should always be commenced by a regard to the stomach and bowels ; there is, we believe, a superabundance of acid, which should be destroyed by the use of absorbents. Should there be no diarrhœa present, we are almost certain of finding whatever evacuations there may be, of a green colour ; and when this is the case, small doses of magnesia should be given, until the bowels are purged ; and this may be repeated *pro re nata*—should, however, the bowels be urged to frequent dejections of a sparing watery kind, and especially if attended with pain or straining, the following formula we have long adopted with entire success :

R Magnes. alb. ust. gr. xij.  
Tinct. Theb. gut. iij.  
Sacch. alb. q. s.  
Aq. font. ℥j M.



Of this, a tea-spoonful is to be given every two hours, until the bowels are more tranquil.

“ We have constantly found, in this complaint, that local applications, when properly managed, are of the utmost consequence; we therefore direct their immediate use. The best we have ever tried is, certainly, equal parts of borax (borate of soda) and loaf sugar rubbed together until very fine—a small quantity of this is to be thrown into the mouth in its dry form, and repeated every two or three hours.”

In the colic of children, he has often used with great advantage the combination of magnesia and assafœtida, as in the following formula :

“ R Magnes. alb. ust. ℥i.  
Tinct. Fœtid. gut. lx.  
—— Theb. gut. xx.  
Aq. font. ℥i. M.

“ Of this, twenty drops are to be given when the child is in pain; and, if not relieved in half an hour, ten drops more must be given. This dose is calculated for a child from two weeks old to a month; if it be older, a few drops more must be given, and as the child advances in age, or becomes accustomed to its use, the proportions of the ingredients must be a little increased. We must, however, caution against too rapid an increase of dose, as this is by no means necessary, and is wantonly subjecting the child to the use of a medicine, which should only be given when pain demands its exhibition.”

This mixture he also found successful in cases in which the disease is periodical; observing, that it should be given the instant the paroxysm is about to commence.

Speaking of ulceration of the mouth, our author remarks, that after removing, by means of purgatives, the fever which sometimes accompanies this affection, he has found the combination of sulphate of copper and peruvian bark very beneficial as a topical application.

In the chapter succeeding to those we have just examined, Dr. Dewees treats of labours, and of their classification and mechanism. In respect to classification, he adopts that of Baudelocque; modifying it, however, in so much, as to present them in the order of their frequency. We shall not attempt to follow him in the description of the various presentations, and of the kind and degree of assistance ne-

ecessary to be given in all these cases ; but refer our readers to his work, for a clear and satisfactory account of that important part of the science of midwifery.

Among the causes of preternatural labours, our author enumerates flooding—convulsions—syncope—hernia—obliquity of the uterus—partial contraction of that organ—compound pregnancy—prolapsus of the umbilical cord—too short a cord—the bad position of the head through the vertex, including presentation of the head, accompanied with the hand—exhaustion—hemorrhages from other parts than the uterus. Each of these causes is treated fully and ably, and rules are given, calculated to meet all the indications which the different circumstances may require.

Under the title of “ Rules for conducting a Preternatural Labour,” (chap. 17.) Dr. Dewees considers those only that are proper in cases in which the hand alone is sufficient to terminate the process, and will enable the woman to deliver herself.

The position of the woman for turning is treated at length, and with the necessary precision, as well as the general mode of performing the operation ; and in the succeeding chapter, the author considers it, and the other methods to be pursued, in each particular presentation of the head, when rendered preternatural by some accident complicating the labour, or when the presentation itself renders interference proper and useful. We cannot undertake to present here the directions laid down by our author, in these cases, nor those he gives us for the use of the forceps. These two chapters contain so much excellent practical matter, and the paragraphs are so linked to each other, that we cannot make any appropriate extract. The author has greatly endeavoured to remove the idle prejudices which too often exist in the minds even of physicians against the application of instruments, and speaking of the forceps, makes use of the following language :

“ Let those who are in the practice of midwifery become well acquainted with the elementary parts of their profession, before they commence it, and then gradually proceed to the

exercise of the more difficult operations connected with it, and the clamour against the use of forceps will in great measure cease, because there will necessarily be less reason for complaint. A severe probation awaits an upright and conscientious man, upon his introduction to the practice of midwifery; for, if he be such, it will be a long time before he will dare to flatter himself that he can do the best possible thing for his patient; and, until he can do so, he will not be satisfied with himself—but this distrust would, very probably, lead him to pursue a conduct which we would earnestly recommend every one to follow under such circumstances; namely, to cultivate his knowledge by constant reading, that he may keep pace with the improvements others make in his profession, and constantly to seek the aid of those better skilled or qualified than himself, when difficulty presents itself to him.”

The various ways which the head of the child may offer in the pelvis, when it may be necessary to terminate the labour by the forceps are, according to our author the following:

“ First. Where the *vertex* answers to the arch of the pubes, and the *forehead* to the sacrum.

“ Second. The reverse of this, the *forehead* to the pubes, and *occiput* to the sacrum.

“ Third. Where the *vertex* is behind the left foramen ovale, and the *forehead* to the right sacro-iliac symphysis.

“ Fourth. Where the *forehead* is behind the left foramen ovale, and the *occiput* to the right sacro-iliac symphysis.

“ Fifth. Where the *occiput* is behind the right foramen ovale, and the *forehead* to the left sacro-iliac symphysis.

“ Sixth. Where the *forehead* is behind the right foramen ovale, and the *vertex* to the left sacro-iliac symphysis.

“ Seventh. Where the head is situated directly transversal: 1st, where the occiput answers to the left side of the pelvis; and 2d, where it answers to the right.”

Chapter the nineteenth, on the rigidity of the soft parts as the cause of preternatural labour, must be regarded as one of the best in the volume, and was presented many years ago to the public, in the form of an essay. According to the author, this rigidity may present itself under various conditions:

“ First, it may arise in the mouth or neck of the uterus, from the circular fibres of these parts maintaining their power inordinately long; but not inflamed.



"Second, it may be attended with inflammation.

"Third, it may arise from previous injury done the parts, by either mechanical violence or inflammation, and its consequences.

"Fourth, it may happen from a relative cause; as the disproportionate powers between the longitudinal and circular fibres.

"Fifth, it may proceed from the too powerful exertion of the tonic contraction of the uterus, especially of the fundus and body."

The first species he divides into three varieties: first, when the subject is very young; second, when she is advanced beyond the twenty-fifth year; and third, where the uterus is prematurely excited.

The remedies proposed for the removal of all these various states of rigidity, are blood-letting, carried sometimes to great extent, even in some instances ad deliquium; and in general, all the means calculated to remove the tension of the muscular fibres. This practice has been found remarkably successful, in many of the most unpromising examples of this affection; and not a little value is added to this chapter by a detail of several interesting cases, that have fallen under the observation of the author.

The preceding chapter (thirtieth) is devoted to the consideration of uterine hemorrhages; but as the subject was originally presented by the author in former numbers of this Journal, we shall not stop to notice it here. Nor shall we occupy our readers with a notice of the subject of puerperal convulsions, which follows, as in our review of Dr. Dewees's Essays we presented his views on the several species of that dreadful disease, and on the proper means to combat them.

The next subject of which our author treats is the assisted delivery of the placenta. After stating that it is by the tonic contractions of the uterus that this part is detached from the surface of that organ; and that it is desirable, at all times, that the placenta be separated pretty quickly after the delivery of the child, he says—

"We have constantly set our face against "time" being the criterion for action, in midwifery, in general; and our aversion is by no means abated, when it is attempted to form a rule from it, for the delivery of the placenta; for the same objections must obtain here, as in the cases we have already declared it should not be employed in. We have already stated by what power the separation of the placenta is effected; and that this would necessarily require a longer or shorter interval, as this agent may be more or less active. It will follow, then, that the expulsion of this may be either very prompt, or rather tardy; we have already pointed out the duty of the accoucheur in the first instance, and the mode by which he is to execute this duty; we shall, therefore, here, only consider what is to be done in the latter."

Too firm an attachment of the placenta, and its tardy separation, may be owing to two principal causes: viz.

"1st, A diminution of the tonic power; and, 2d, too great a firmness in the connecting medium of this mass with the uterus; each of which requires a little difference in management. The first of these may be known, 1st, by the uterus being rather larger and softer than it should be for a short time after delivery; 2d, by no portion of this mass being within the reach of the finger when introduced into the vagina; 3d, by there being no return of the alternate contractions of the uterus; and, 4th, when a force is applied to the cord, it gives the idea that the placenta is descending; but this is known not to be the case, so soon as we cease to draw upon the cord, as it then instantly mounts again into the pelvis."

In respect to the proper manner of treating these cases, Dr. Dewees observes, that when the retention is owing to a want of tonic power, all attempts to deliver the placenta must be forborne, until, by friction over the region of the uterus, we have forced it to contract, and harden itself under the hand. When the retention arises from too firm adherence, the separation of the after-births will require not only a firmer contraction of the uterus, but a longer continuance of it, as well as a particular application of force to the placenta itself by means of the cord.

"Force, to be successfully applied for the separation of the placenta, must be directed in such manner as to act perpendicularly to its surface or its influence will be destroyed—to effect this, we must first ascertain the part of the uterus to

which this mass adheres; this is to be done by observing the part of the pelvis to which the funis seems inclined, and this will point out the portion of the uterus to which the placenta is adherent—thus, if the cord descends behind the symphysis pubes, the placenta will be attached to the anterior part of the uterus; if before the projection of the sacrum, it will be found at the posterior part of the uterus; if to either side, the placenta will be to the side on which it is found."

The subject of encysted placenta, which occupies our author in section the third, is treated in a concise and clear manner, and the mode of operating in these cases laid down with precision. Section the fourth, on the enclosed and partially protruded placenta, and section the fifth, on the delivery of the placenta, when the cord is broken or very feeble, are creditable articles, and are entitled to the careful attention of the accoucheur.

In chapter the thirty-third, our author treats of the inversion of the uterus, which he remarks may be either complete, or incomplete. In the former, the fundus and body of the organ passing through the os internum, are turned entirely inside out to the very neck: the incomplete may be in different degrees. We have, on a former occasion, presented to our readers, Dr. Dewees's opinion respecting the symptoms, causes, and proper treatment of partial inversion of the uterus, therefore need not occupy them again in the same subject; but refer them to our former article, though more particularly to the present work.

The succeeding chapter is occupied with valuable observations of twins, in respect to the signs of which, he remarks—

"The whole of the information we can gain, either by taking into consideration all the enumerated signs, or by touching, as proposed by Baudelocque, can never amount to more than presumptive evidence, as the whole of the signs have been known to exist, without the woman being pregnant of twins; and the quantity of liquor amnii differs, from a few ounces to several pounds, in even single pregnancies; therefore no certain conclusion can be drawn from the mobility or immobility of the fœtus in utero."



The directions for the management of the children, and of the placenta, are clear and judicious; but want of room will prevent us from extracting from this chapter more than the following lines, respecting the time we should wait, in these cases, before acting.

“All rules for our conduct, taken from the lapse of time, are liable to very serious objections; for mere waiting does not insure the proper condition of the uterus, to render our acting safe; and we are never to act if that proper condition does not follow, however long we may have waited; for, at the end of four hours, (Dr. Denman's rule,) it may be just as improper to deliver, as it was fifteen minutes after the birth of the other child; and if contraction will justify us to deliver at the end of four hours, it ought to justify us at any intermediate period it may take place. And if we are to act at the end of four hours, be the condition of the uterus what it may, (for nothing is said of the state of this organ,) we shall as certainly do mischief by our interference, if the uterus is not contracted, as if we had acted at any other antecedent period. If then we do not insure the contraction of the uterus by waiting, we gain nothing by waiting; and it will, therefore, be proper to act, whenever we are assured that the powers of the uterus are in full and healthy play.”

With the learned essay on the rupture of the uterus, we shall not occupy our readers, as the subject has already been laid before them, by the author, in one of the former numbers of this Journal.

Part the fourth of the work is occupied with observations on deliveries performed by cutting instruments, applied either to the child or mother. The causes of these are stated to be, 1st, a deformity of the pelvis; 2d, a deformity of the child on its deformity; 3d, acrid deformity; as hydrocephalus, dropsy of the abdomen, &c.

The resources of art under deformities of the pelvis, according to our author, will be, 1st, turning; 2d, forceps; 3d, cephalotomy; 4th, cesarean operation; 5th, premature delivery; 6th section of the pubes; 7th, regimen during pregnancy. Each of these measures is separately considered, the cases to which they are applicable are pointed out, and their value compared. The whole forms one of

the most valuable portions of the work, from which, however, the already too great extent of this article will prevent us from extracting.

In concluding our remarks, we must beg our readers to observe, that in bestowing on the work before us all the praise to which it is entitled, we do not wish to be thought so blinded by the very exalted opinion we entertain of our author's abilities, as not to discover in it some defects. But we may safely say, that our complaints on this occasion are not founded on any imperfection in what we have read in this volume, but on the few omissions the author has made, and which, in a system of midwifery, should have been carefully avoided. Many diseases of pregnancy, as hemorrhoids—costiveness—varicose veins of the legs, thighs, and abdomen—headach—vertigo—palpitation—syncope—anasarca of the extremities—deserved as much notice as some he has mentioned; and laceration of the perineum is an accident sufficiently serious in its consequences, not to have been neglected, among those sometimes attending labour. The same remark may, with equal justice, be said of many of the diseases of young children, which deserved as serious attention as those he has mentioned. These are omissions which we the more regret, as we are sensible of the large share of valuable information which he could have afforded the student or practitioner on these various subjects. But we confidently hope, that in future editions, the consideration of these affections will be taken up; and that he will, at some period not very distant, favour the public with his judicious views on the diseases of children and of women.\*

L.

\* The writer of the above review was not aware, that Dr. Dewees is now preparing for the press a distinct work on the diseases of children, in which the subjects that he regrets having been omitted, will be elaborately treated.

EDITOR.

## OBITUARY.

[WE very readily give place to the following obituary notice, which has been transmitted to us for the purpose. The distinguished reputation of the diseased was well known in this country, with some of the learned men of which he maintained a regular correspondence, and manifested, at all times, a lively interest in the progress of our medical literature, and general prosperity. EDITOR.]

### HENRY CALLISEN, M. D. &c.

DENMARK has again lost one of its most distinguished men—Henry Callisen, Counsellor of State, Director of the Surgical Academy, and Knight Commander of the Order of the Dannebrog, was born on the 11th of May, 1740, at Preets, in the dutchy of Holstein, where his father was a respectable clergyman. Already at school, he had acquired an uncommon fluency in speaking the Latin. In his fifteenth year, he came to Copenhagen, to study, in conformity with his father's wish, and his own inclination, surgery, under a gentleman of the profession, then of considerable repute. During this period, the Frederik's Hospital was founded, and the same gentleman appointed first surgeon at the new establishment: he got thereby an excellent opportunity to profit by his tutor's practical instructions, and he certainly did not lose it. His father's death deprived him, about this time, of all support from home, and he saw himself obliged therefore to accept of a situation, as assistant to another surgeon, where he received the paltry salary of about thirty cents a week. After having undergone, in the course of a year, his exa-



mination in surgery and anatomy, he was appointed first surgeon on board the frigate, fitted out for exercising the midshipmen, in the year 1761, and soon after, one of the surgeons of the Frederik's Hospital. He underwent, three years later, without previously having studied at the University, the examination called "*Examen medicum rigorosum*," a thing never heard of before, in the most distinguished manner, and opened the examination with a Latin speech, concerning the difficulties which a student without fortune had to encounter. The year 1767, Callisen went abroad, with a stipend from the King, of five hundred dollars per annum: but this sum not being sufficient for his support, particularly at so expensive a place as London, he set up, in partnership with Mr. Marethetts a dentist, a shop of medicines and drugs. After having received, in 1771, quite unexpectedly, an appointment as first surgeon in the navy, he returned to his own country, where he was received with that kindness and distinction, which his industry and application so truly deserved.

Feeling the near connection between the different parts of the science, it was not sufficient for Callisen to have given public proofs of his high perfection in surgery, but he wished also to convince his countrymen and his government, that he was not deficient in medicine; and therefore he defended publicly, in the year 1771, his treatise, "*Præsidii classis regię sanitatem luendo methodo*," and obtained thereby the dignity of M. D.

The same year he was appointed Professor in Surgery at the University of Copenhagen; and the next, member of the principal Medical College. Mr. Callisen was one of the original founders of that Medical Society, celebrated all over Europe, the President of which he was, for more than twenty years, and more than nineteen treatises of his are found in the publications of that Society. He was elected in the year, 1784, a member of the Society of Sciences.

During this whole period, the different duties he had to discharge, were very extensive; and, at the same time, the

now approaching infirmities of age, though of a strong constitution, made an easier mode of life highly desirable to him, and this motive alone could persuade him to give up his chair as Professor. The scene was highly interesting and touching indeed, when, on the 29th of March, 1805, the venerable and beloved tutor took leave of his pupils, four hundred to five hundred in number, in the most affectionate manner. They presented him, afterwards, as a mark of their love and attachment, with a gold medal, representing his portrait on one side, and an oak on the other, which he accepted.

Among his numerous works, the "*Systema Chirurgiæ hodiernæ*" is the most distinguished, and its value acknowledged, as well in the old as in the new world.

In the discharge of his duties, as a practical physician, he was as indefatigable, as in those of a public nature. He discharged these sacred duties till the age of seventy-eight; and many sick and suffering people received, if not help, at least comfort, by his kind advice and consolation: he was considered an oracle by high and low, by rich and poor.

From his eightieth year, he seldom left his house, but being in full possession of his mental faculties, he still read and signed all official papers of the Medical College. In the midst of those nearest and dearest to his heart, he expired on the 5th of February, 1824. His departure was not unlike the setting sun, which does not leave the earth before he has dispensed joy and satisfaction all around. Hygeia mourns at his tomb, and Denmark blesses his memory.

## MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

## ANATOMY AND PHYSIOLOGY.

*On Malformation of the External Ear, by M. Bernard.*—Alexander Trippet, aged eight years, was admitted in the *Hôpital des Enfans* in the course of the month of September, 1822, labouring under a slight derangement of the stomach. A few days after his admission, a deep, infundibuliform cavity, the bottom of which was situated inwards and forwards, and through which the boy heard, whether the natural opening was closed or not, was observed behind the auricle of each ear and before the mastoid process: a probe introduced into this cavity passed to the depth of several lines.

The auricle had experienced no alteration, except that the opening of the meatus externus was thrown forwards, and was narrower than usual. The meatus was free, but its bottom was not visible. The hearing was dull, and the boy answered only in monosyllables. He was on the point of being discharged, when he was attacked with a malignant sore throat, which carried him off in a few days. The following appearances were observed on a careful examination of the two ears: the adventitious opening, which was wholly concealed by the auricle, terminated at the bottom of the meatus externus; the cartilage of which was wanting at this part, as will be hereafter described.

There were neither membrana tympani nor the small bones of the ear: a very thin mucous membrane lined the cavity of the tympanum and the two canals, which became anteriorly confounded with the skin: the length of the accidental canal was about four or five lines: that of the right side was closed by some thick crusts, which could not be extracted during life. The meatus externus, which was slightly contracted, was five or six lines long: it was curved forwards: the posterior part of the cartilage, interrupted by the inner orifice of the adventitious canal, was attached in one part to the base of the zygomatic process, and on the other to the mastoid. This latter eminence was excavated at its base, to form the posterior paries of the adventitious canal: the mastoid cells were only covered by a very thin layer of a compact substance.



At the bottom of the meatus externus, the internal wall of the cavity of the tympanum and the openings communicating with the labyrinth were perceptible.

In several parts the temporal bone was extremely thin; the petrous portion was; however, in no respect altered.—*Journal de Physiol. Experiment.*

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*On some Changes produced by Re-agents on Animal Matter, and on the Nature of the Blood.*—At the sitting of the *Société de Pharmacie* of the 12th of April last, M. Magendie read a report on a work by M. Chevreul, embracing the above topics.

The author had proposed to himself for inquiry, whether azoted organic substances become converted into fatty matters by putrefaction, nitric acid, &c.; or, as Berthollet had advanced, in 1780, whether the fatty matter extracted by these means pre-exist in the substances employed.

When the dried tendons of the elephant are treated with alcohol, a fatty substance is obtained, fusible at 30.5 (R. ?), the composition of which is similar to that of the fat of the same animal.

If the tendons be treated by nitric or hydrochloric acid, an equal quantity of the same fat is extracted.

These three re-agents, so different amongst themselves, alcohol, nitric, and hydrochloric acid, give the same results as regards the fatty matter obtained.

The same tendons, left for a year in water, scarcely yield 0.02 or 0.03 of a substance formed of the margaric and oleic acids—a substance which, in its nature and quantity, corresponds with the proportion of fat which may be extracted by means of alcohol.

On treating the same tendons with a solution of potass, the organic matter is dissolved, and the liquid, left to itself, suffers supermargarate of potass to be deposited.

The yellow elastic tissue of animals, in which the proportion of fatty matter is greater than in the tendons, presents the same phenomena.

The fibrine of arterial blood, treated with alcohol and ether, yields a fatty matter, the proportion of which it is difficult to estimate, from its forming with water a sort of emulsion: this circumstance does not occur with fat formed of principles immiscible with water.

The fatty matter extracted from fibrine differs considerably from other fatty matters: on a comparison of all its physical and chemical properties, it may be considered as identical with the fatty matter of the brain and nerves.

From these different experiments, M. Chevreul concludes:—That the fatty matters extracted by means of alcohol and the

nitric and hydrochloric acids are not, as advanced by M. Berzelius, a product of the reaction of these agents ; but that they are constituent principles of azoted organic matters.

In the second part of the *Mémoire*, after some general reflections on the comparative nature of the blood in a state of health and disease, an important fact is adduced relative to the disease of new-born children, known under the name of induration of the cellular tissue—a disease almost always mortal.

If the skin of individuals dead of this disease be cut into, a yellow liquid runs out, composed of albumen, of an orange-red, and of a green colouring principle. These colouring matters are found in the bile of the same children. The blood of jaundiced children yields coagula formed of albumen and fibrine, as in health ; but the serum differs considerably from that of health: its composition and colour are the same as those of the liquid obtained by incising the skin. A property common to both fluids appears to be the cause of the disease : these liquids, when left to themselves, assume the form of a jelly, composed in part of a membranous matter : the colouring principles remain in the liquid portion.

The reporter properly considers, that, in order to render these results still more positive, it is desirable that M. Chevreul should subject the blood of a child in a state of health to a comparative examination.—*Journal de Pharmacie, Juin, 1824.*

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*Structure of the Gall-Bladder.*—M. Amusat lately exhibited to the Academy of Medicine several anatomical preparations of the biliary canals, demonstrating the true mechanism of the reflux of the bile from the ductus choledochus into the gall-bladder. M. Amusat has discovered, and shown, the existence of a spiral valve, a sort of Archimedes' vice reversed, which the neck of the gall-bladder is provided with.—*Revue Medicale, Juin.*

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*Effect of Castration in certain Animals.*—M. Faneau Delacour, of Souzay, has performed a number of experiments upon sheep and pullets, with a view of determining the effect of castration upon the animal economy, conceiving that the loss of organs so important as the testicles, could not take place without materially affecting the health ; which opinion was strengthened by considering the sudden evils often arising from more trifling causes—such as the disappearance of eruptions, or the drying up of a long established ulcer.

M. Delacour had eighty pullets castrated in his presence: eleven of these immediately exhibited well marked signs of cerebral affection, and in three others the symptoms were observable, but not to so great a degree. Of eight which became

mad, four of the worst, as well as two out of three which were threatened with apoplexy, were cupped upon the rump, and an actual cautery applied on each side of the cupping glass; and in the four first instances, a cautery was also applied on the head. All these recovered—whereas, one left entirely to the efforts of nature, died on the third day, the brain exhibiting the strongest marks of inflammation.

The same phenomena were observable among a flock of sheep, and in a greater proportion. The same remedies were made use of in seven of these animals, and they all recovered on the day the cauteries were made: whereas, two left entirely to nature died—one on the fourth day, with all the marks of madness—the other on the second day, in a state of coma. The examination of the heads showed, in the first instance, a violent state of inflammation of the brain and its membranes—the brain of the second was softened, and the ventricles filled with a fluid resembling the white of an egg a little coloured.—*Journal Universel des Sciences Medicales, Juin.*

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*Wound through the Chest, piercing the Diaphragm and Stomach.*—On the 7th of May, 1824, a man about twenty years of age, on the evening of his wedding day, plunged a very sharp cook's knife in the interval between the sixth and seventh rib, on the left side, and towards the sternum. He immediately fainted away. The medical men who were called in, judging from the situation and direction of the wounds, and the marks of blood upon the knife, that it had penetrated about two and an half inches—the symptoms announced an internal hemorrhage, which appeared to cease for a time: it, however, soon recurred, and the man died thirty-four hours after committing this desperate act. The body being opened, the following appearances presented themselves: The wound had penetrated the cavity of the thorax for the space of an inch, but the lung was not wounded—yet there was a considerable effusion of blood on that side, arising from the wound of an intercostal artery. At the spot where the diaphragm was wounded, a sound was stopped in consequence of the protrusion of a portion of omentum. In the abdomen, the stomach was found pierced to the extent of three lines, at its anterior and superior part—and an effusion of blood had taken place into the colon, extending to the hypogastric region.

The conclusion which the reporter of this case (Dr. Millet,) draws from this examination, is that it tends to confirm the experiment of Dr. Williams, and goes to prove that the lungs do not, in their natural state, fill the interior of the pleura in the act of respiration—for, had that been the case in the instance above related, the lung could not have escaped without being wounded.—*Journal Universel, Juin.*



## MORBID ANATOMY.

*State of the Blood in Jaundice.*—M. Chevreul observes, that there are some peculiarities in the blood of new born children who die of the disease called skin-bound, (*induration.*) If the skin of these subjects is incised, a yellow liquid escapes, composed of albumen, a colouring matter of an orange red, and one of a green colour; and these matters are also found in the bile of these infants. The blood of children with jaundice differs also much from that of healthy children, as far as regards the serum—its composition and colour being the same as above mentioned.—*Journal de Pharmacie, Juin.*

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*Ossification of the Arachnoid Membrane.*—MM. Cullerier and Maingault, relate the case of a maniac, in whose brain several scrofulous cysts and abscesses were found, as well as many ossifications of the arachnoid membrane. The patient had complained during life of a very disagreeable smell.—*Revue Médicale, Juin.*

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*Rupture of the Bladder.*—Dr. Fix, of Berne, reports the case of a young lady, aged twenty, of a lymphatic temperament, who had suffered, from the age of puberty, with various symptoms of debility: her face was remarkably pale; and, though she menstruated regularly, the discharge was scarcely coloured. After having languished in this way for some time, symptoms of intestinal inflammation supervened. Constipation and retention of urine were troublesome—the abdomen was tense, tender to the touch—the pulse small and contracted, and sixty in the minute. Glysters lessened the volume of the abdomen, but did not decrease the pain. The urine was passed frequently, in small quantities, and loaded with mucus—thirst great, and appetite quite gone. Death soon followed. On opening the body, a serous effusion, to the amount of ten or twelve pounds, was found—traces of inflammation also were perceived on the small intestines—but the bladder was the principal seat of disease: it was reduced to a thin membrane resembling a mucous net-work, and was torn throughout nearly the whole of its extent.—*Journal der Pract. Heilkunde.*

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## SURGERY.

*Operation of Lithotomy.*—M. Dupuytren has lately performed this operation in a new manner, and with a new instrument. The operation may be called the transverse operation, and the instrument a double *lithotome caché*—the instrument having, in fact, two blades, so disposed as to cut both left and right at the same time, on withdrawing it from the bladder. The sound is

introduced, and the membranous portion of the urethra divided in the usual manner. The lithotome is then introduced into the bladder—it is opened, and, on withdrawing it, the prostate gland is divided so as to be cut in two halves, the one anterior, the other posterior. By this method, the vasa deferentia, the rectum, and the transverse artery of the perineum, as well as the pudica, are said to be avoided. M. Dupuytren has lately operated on a child, one year old, in this manner, and no accident has followed the operation.—*Bulletin des Sciences Medicales, Juin.*

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*A Comparison of the Operations for Cataract by Couching and by Extraction; being the subject of a thesis to be defended and illustrated in a public competition.* By M. J. Cloquet.—The author does not enter into the question of what cases require operation, but gives a comparative view, resulting from his experience and observation, of the dangers of two of the operations for cataract, viz. couching and extraction. The operation of destroying the cataract by absorption is not, in the whole paper alluded to. He divides the contents under three heads:—1st. Of the accidents common to both operations—2d, of those cases in which one operation is preferable to the other—and 3d, of the comparative success of both operations.

#### I.

1. *Couching is more easily performed*: although the favourers of the operation by extraction say otherwise. In both, the time for deciding to operate is the same. Of the evils which are alike common to the two operations, he gives formally the following list, with remarks:

1st. *Pain*.—Depression of the cataract with the needle seems the more painful operation, from the suffering of the generality of patients.

2d. *Injury of the Iris*.—It is liable to be hurt in both ways of operating. If in extraction, it is while puncturing and cutting the cornea—while opening the capsule of the lens—while the lens is protruding through the pupil. If in couching, it may be punctured by the point of the needle.

3d. *Hemorrhage* may occur in either case, from wounding the iris, or in piercing the choroid coat.

4th. *Vomiting* is of rare occurrence in either operation—but is most dangerous after extraction.

5th. *Inflammation* produces most bad effects after extraction, though the dangers after both are very great.

6th. *The growth of an opaque membrane in the eye* succeeds extraction the most frequently.

7th. *The closing of the pupil* is common to both.

2. *Concerning the dangers which are peculiar to Couching.*

1st. *A scar upon the sclerotic*, is not of great importance.

2d. *The danger of wounding the ciliary ligament and the ciliary nerves*; either of these accidents may be easily avoided.

3d. *The rising of the lens* after having been depressed, is seldom met with—a milky effusion within the capsule, or a secondary cataract of the capsule, may lead to that supposition.

4th. *Pain, irritation, and inflammation*, may affect the membranes, especially the retina, after this operation.

5th. He informs us that the *protrusion of the cataract*, during the operation, through the pupil into the anterior chamber, is a slight accident. It is bathed in the aqueous humour, and becomes absorbed.

6th. A considerable time is required to complete a cure after this operation.

3. *Concerning the dangers which are peculiar to Extraction.*

1st. *Too small and too large, incisions of the cornea*: the former prevents the cataract's escaping—the latter endangers a loss of the humours, and gangrene.

2d. *A white cicatrix*, not always destructive of sight, may remain upon the cornea.

3d. *The pressure of the ball*, in squeezing out the lens, brings on inflammation.

4th. *A protrusion and a loss of some of the humours* may happen to the most expert surgeon—and blindness is then almost inevitable.

5th. *The falling forwards of the iris*, is a serious occurrence, and is productive of many dangerous evils.

6th. *Staphyloma* of the vitreous humour and hyaloid membrane occurs after extraction: the consequences are, sometimes, fistula of the cornea and wasting of the ball of the eye.

7th. *Admission of air* into the chambers—this, he says, is one source of irritation.

8th. *The lower eyelid being admitted into the incision*, is difficult to obviate, and is a source of irritation to the eye, and of loss of its humours.

9th. *The irritation of the tears* causes inflammation.

10th. After extraction has been attempted, *no other operation can be again tried*: this is not the case with couching.

## II.

*When one operation ought to be done in preference to the other.*

1st. If the patient be very irritable, *couching* is best.

2d. If the ball of the eye project much or if the contrary be the case—*couching*.

3d. If the pupil be very small, and does not yield to belladonna—*couching*.

4th. If there be leucoma, nebula, pterygion—or if the veins



of the eye be varicose, and the lids prone to inflame—*couching* rather than extraction.

5th. If it be the floating cataract—*couching*.

6th. If it be the very soft, cheesy cataract—*couching*.

7th. If the capsule of the lens adheres to the iris—*couching*.

8th. If there be dropsy of the eye, neither ought to be done—if any—*couching*.

9th. If there be a small sized cornea—*couching*.

10th. If the cataract have increased in size—*couching*: if it be small—*extraction*.

11th. If we are dubious as to the nature of the cataract—*couching*.

12th. If there be staphyloma of the sclerotic, neither should be done: if any, *extraction*.

### III.

In comparing the success of the two operations, *couching* appears most favourable. In 246 operations, 166 were performed by *couching*—45 were unsuccessful—121 were nearly successful: Eighty had the cataract extracted—38 were left blind—42 nearly cured.

He concludes that neither operation is exclusively to be preferred; but the easier and more generally successful one ought to be practised most frequently. He prefers, by the drift of his paper, the operation of *couching*; although in his thesis, by the mistake of the printer, the word *extraction* is made use of instead of *depression*.—*Lond. Med. and Phys. Journal*.

## THEORY AND PRACTICE OF MEDICINE AND MATERIA MEDICA.

*Fatal Effects from the Abuse of Iodine*.—M. Zinck has lately communicated two cases of fatal effects from the incautious use of iodine internally—and a third in which unpleasant symptoms were induced, but they yielded to a proper treatment. In one case there were besides diarrhœa, priapism, tremors of the whole body, but especially of the arms—violent palpitations, and other nervous symptoms. The body was not opened. In the second fatal case, the symptoms are not detailed, but dissection exhibited violent gastro-enteritis and other traces of inflammation. These cases strongly confirm the remarks of Dr. Gairdner respecting the caution necessary in the exhibition of this medicine internally.—*Nouvelle Bibliothèque Médicale, Juillet, 1824*.

*Belladonna a Preventive of Scarlet Fever*.—It has been long known that Dr. Hahnemann, of Leipsic, has asserted the above fact—but, since the year 1818, several practitioners in the north

of Europe have repeated these experiments, and they find them founded in truth. The first of these, Dr. Brendt, of Custrin, affirms that all who employed this remedy escaped the infection—and his account is corroborated by Dr. Mushbeck, of Demmin, in Western Pomerania, who says he has used it for seven years, and with equal success—and he administered it to all those who dwelt in the houses where scarlet fever prevailed, continuing its use until desquamation of the cuticle had taken place in those attacked. Dr. Dusterbourg, of Warbourg, has also published an account of a series of experiments, confirming these statements—and several subsequent memoirs have appeared, all equally corroborative of this virtue in the belladonna. The formula generally recommended, is a solution of two grains of the extract in an ounce of some distilled water—and to children from one to ten years of age, from one to five drops of this solution is given four times in the day—from ten years of age and upwards, from six to ten drops is given, also four times in the twenty-four hours.—*Revue Medicale, Juin.*

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*Nitrate of Silver in Chorea.*—M. Priou, of Nantes, has published two cases of chorea, cured by the nitrate of silver, which he, however, considers as a remedy quite new, and first employed by himself in these cases. The first case is that of a female, seven years and a half old, who had tried all the usual remedies in vain. The following formula was prescribed: R. Argent. Nitrat. gr. vj. Ext. Opii ʒj. Moschi ʒij. Camphoræ ʒiv. divided into ninety-six pills—and one was at first taken morning and night. In fifteen days all the symptoms had disappeared. The disease afterwards returned, but the same remedies cured it again. Sixty-nine pills were taken during the treatment. The patient is now fifteen years and a half old, and remains well.

The second case is also a female, seven years of age, who was seized with chorea suddenly after a fright. After employing various medicines, the cold bath, &c. without success, or with only partial relief, the above named pills were given, one morning and evening. After the fourth day, in consequence of the perceptible amendment, the parents of the child gave eight pills in the day, without informing M. Priou. They were afterwards continued for a month, at the rate of two, and then one, in the day—when the patient was cured, and has had no relapse.—*Journal Général de Médecine, Juin.*

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*Poisoning by Hydrocyanic Acid.*—Dr. Heller, in a small pamphlet, lately published, on the above subject, objects to the use of certain excitants, such as the oil of turpentine and strong coffee—as, he says, they are always useless when the dose of this acid has been large enough to stop the animal functions—and

that they are positively hurtful when the quantity has been so small as only to produce those symptoms which terminate of themselves—and finally, that, in these cases of poisoning, the only stimulants necessary to be used are ammoniacal or etherial frictions, the open air, acidulated drink, motion and exercise.—*Journal de Pharmacie, Juin.*

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*Case of Volvulus cured by the employment of the Hydrargyrum.*  
—M. Rolland has lately published a case of *ileus*, which he considers to have been occasioned by intus-susception. The symptoms were extremely violent, and the vomiting of fæcal matter abundant—leeches were applied to the belly, *vermifuges* [!] administered, with glysters and baths—but all were of no avail. Nine ounces of mercury were now given in two doses, after which all the symptoms disappeared “*comme par enchantement.*”

It is difficult to explain the *ratio medendi* of the hydrargyrum, and it is extremely doubtful whether intus-susception, existed—from the means which were successfully used, we should almost be induced to affirm that it decidedly was not—in the retrograde intus-susception, *it is possible* that mercury might be successful, but certainly not in the progressive—on the contrary, the mischief would in all probability be considerably increased by it—and even in the retrograde kind, by insinuating itself between the intus-suscepted portion and the intestine surrounding it, would be likely to increase any inflammation which might be existing.—*Arch. Gén. de Méd., Juin, 1824.*

Large quantities of quicksilver, however, were much recommended in *ileus* by the older writers, and we know that it has been employed with success. We were witnesses to a case of *ileus* in which upwards of a pound weight of small shot was swallowed as a substitute for quicksilver, and the patient recovered. The patient was a female servant in a clergyman's family in the country; in which family we were residing at the time.—*Lond. Medical Repository, Aug.*

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*Of the Source of Contagious Yellow Fever.* By M. Audouard.  
—At a late sitting of the Academy of Sciences of Paris, M. Audouard read a memoir on this subject, wherein he has endeavoured to prove, by the adduction of numerous observations, that this disease, whenever it manifested itself in a contagious form, proceeds from a *particular infection generated in vessels which have been, or which are, engaged in the slave trade.* MM. Chaptal de Humboldt, Dumeril and Magendie, are nominated by the Academy to report upon this memoir.

It would seem, from Dr. Burnett's interesting official report of the fever which appeared in the Bann, on the coast of Africa, and in the island of Ascension, that that fever made its first ap-



pearance in the Bann's tender, (the San Raphael, a small Spanish schooner, taken by the Bann, with one hundred and fifty slaves on board, and afterwards made into a tender, and manned with men from the Bann,) and very soon afterwards in the Bann, the men of the latter having been engaged in the fitting out of the former; and that the fever was afterwards communicated by them to the detachment of marines at Ascension. We mention this circumstance as being calculated to show that the opinion of M. Audouard has some plausibility.—*Lond. Medical Repository*,

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*Case in which the Pancreas had degenerated into a large Cyst, communicating with the Duodenum.* By M. A. Duponchel, M. D. —A soldier died in the military hospital, at Cadiz, in February, last, after a long and obscure disease of the abdomen. On dissection, the stomach was found inflamed—and the duodenum, which adhered to a large tumour, was inflamed, and of a reddish brown colour. At its posterior aspect was an opening communicating with the interior of this tumour, which occupied the place of the pancreas. Not a vestige of the glandular structure of the pancreas remained. The tumour occupied the place of this viscus, and consisted of a cyst, whose parietes were thick, of the size of the head of a new born child, containing a brownish matter resembling coagulated blood, mixed with a broken down cerebral like substance.—*Bull. de la Soc. Méd. d'Emul., Mars, 1824.*

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*Elongation of the inferior Extremities.*—MM. Richerand and Cloquet relate the case of a patient of the hospital of St. Louis, whose lower limbs admit of being alternately lengthened and shortened to the extent of three or four inches. These gentlemen explain the circumstance by supposing that the heads of the ossa femora are destroyed, as well as the sides of the cotyloid cavity. The patient is fifty years of age—he walks with difficulty, but without pain. The limb upon which he stands becomes shortened, and the great trochanter touches the crista ilii—the limb which he raises, on the contrary, becomes lengthened to its natural state, and alternately shortened upon making another step. The patient is afflicted with several exostoses of the bones of the pelvis, as well as many ossific tumours in the substance of the muscles.—*Revue Medicale, Juin.*

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*Cure of external Hydrocephalus by Puncture.*—Dr. Fenoglio relates the case of a child, eighteen months old, who fell from a balcony fifteen feet from the ground: the left parietal bone was depressed, but there was no fracture, and not a drop of blood escaped from the nostrils; the left humerus, and the bones

of the fore-arm were fractured. The parietal bone resumed its usual form in a few hours. On the day following the accident, violent fever came on: the breathing was stertorous, and the skin was burning hot—the lower extremities were cold, and there was a trembling motion of the right hand. Bleeding by leeches was resorted to, and ice applied to the head; and the fever was relieved. At the end of the fourth day, however, a fluctuating tumour was perceived at the posterior fontanelle, and which, being pressed upon, disappeared, but returned when the pressure was removed. In proportion as this tumour increased externally, the child became more lively—but, as Dr. Fenoglio justly saw the danger which threatened, in consultation with Dr. Giordano and Professor Rossi, it was determined to wait some time before any attempt was made to remove the swelling, considering it to be the product of extravasation only. After the seventh day, however, they changed their opinion as to its nature, and a small puncture was made at its most depending part, and a corrupted and fœtid lymph was evacuated. The infant immediately fell asleep, and slept for eight hours—but awoke at the end of that time with renewed fever, and the symptoms previously described. Leeches were applied to the left foot, an opening medicine administered, and a strong infusion of digitalis ordered. (*Neither the strength nor doses of this infusion are mentioned.*) In the evening, the fever was diminished. The opening into the tumour was not closed, and a fluid escaped from it drop by drop, but so slowly that it was only known by the moisture of the pillow.

The intellectual and physical faculties of the child improved rapidly—the bowels acted freely—and this amendment went on from day to day, so that the parents conceived her free from danger. At the end of the second week, however, on a sudden, the tumour ceased to discharge—there was suppression both of fæcal evacuations as well as of the urine, and the former symptoms again recurred. Leeches were again applied to the ankles, castor oil given so as to purge, and the digitalis again had recourse to, with so good effect, that in about eleven days the hydrocephalus had entirely disappeared.

Another severe attack was experienced after this, preceded by vomiting, and accompanied with convulsions of the whole body, but which were relieved by the same means; and the patient finally got well.—*Journal Universel, Mai.*

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*Observations on the Inflammation of the Appendix Vermiformis Cæci.* By M. Loyer-Villermay.—The following cases and remarks relate to a disease of a portion of the intestinal canal which has hitherto received but little attention.

*Case 1st.*—M. G. aged thirty-five years, of a sanguine temperament, and usually enjoying health, led a sober and regular

life, when he was suddenly attacked, on the morning of the 18th of November, 1823, with acute pain in the right side of the abdomen, followed by slightly bilious vomiting: all this portion of the belly was extremely sensible to the touch. The testicle of the same side was strongly retracted: the pulse seemed but little different from its natural condition. No other precursory symptom had been noticed than a sensation of cold on the upper surface of the right foot, which existed for three or four days before the invasion. M. Sévestre, his usual physician, prescribed emollient drinks, glysters of the same nature, and the application of twenty leeches to the anus, the bites of which bled for the whole day. In the evening the pain was diminished, the vomiting had ceased, but the pulse had acquired frequency: the night was restless. On the second day thirty leeches were applied on the right iliac region, where the pain was the greatest.

Whey, with nitre and emollient cataplasms, were ordered in the evening. In consequence of the hardness of the pulse, notwithstanding the diminution of the pain, bleeding from the arm was employed to the extent of four cups. On the third day twenty leeches were again applied to the most painful part of the abdomen. Every six hours he was put in the warm bath. During the night, the vomiting of a dark green, almost black liquid, recurred, accompanied with very painful retching. On the fourth day, at ten in the morning, the pulse could not be felt, the extremities were cold—he did not complain of any pain, even in the belly, nor did he exhibit any restlessness. The vomiting continued, and the facies hippocratica indicated approaching death. With a view of diminishing the vomiting and inward heat at the epigastric region, of which he complained, lemonade iced was ordered, which was swallowed with pleasure, and, at the same time, the lower extremities were covered with very active sinapisms. At midday he expired, almost without any agony.

*Dissection twenty-four hours after death.*—The abdomen being opened, the testicle was found situated near the inguinal ring, but healthy. At the same time, on the right side, and as high as the iliac fossa, an effusion of about five ounces of a blackish serum, exhaling a gangrenous odour, was discoverable. In the midst of this floated the appendix vermiformis, a third longer and more bulky than common, black, gangrenous, and reduced to *putridity*. It could be detached without the least exertion. The marks of gangrenous inflammation became weaker, according to the distance from the appendix, and entirely disappeared at the anterior of the cæcum, which was healthy. The reflections of the peritoneum formed around this intestine were sprinkled here and there with small gangrenous spots, and adhered to the iliac fossa. A cellular tissue, impreg-



nated with a sero-purulent liquid, surrounded the right kidney, which was exempt from disease. The mucous membrane of the stomach was red and thickened—that of the intestinal tube, as well as of every other organ, was in its healthy state.

*Case 2d.*—A man, aged thirty-seven years, and of a good constitution, had an inguinal hernia on the right side, which he kept up by means of a truss. On the 21st of July, 1821, an hour after having supped, he felt general indisposition, and afterwards a desire to vomit, with very violent pain towards the umbilicus, and a sensation as if a bar crossed this region, and strongly compressed it. Vomiting, which he provoked, brought up a very green and viscid bile—but instead of being relieved, his pain and anxiety augmented during the night. Glysters were administered, but without effect. On the 22d, at six o'clock in the morning, there was a momentary calm, but extreme debility—his face was pale—the tongue moist—the thirst great—the pulse small, irregular in strength, and frequent—cramps in the calves of the legs.

The umbilical region was painful to the touch—the hypochondria were slightly tumefied—and the hernia accurately reduced. When the patient wished to speak, the pain increased so much as to make him call out, and the respiration became difficult. Dr. Piron Sampigny, his physician, ordered him a decoction of linseed, slightly sweetened, glysters, and emollient fomentations—to be bled from the arm, and leeches to be applied—to which, however, the patient stubbornly objected.

About two o'clock he repeatedly vomited a green porraceous, bile—similar alvine dejections—dysuria—very considerable tumefaction of the belly—slight pain in the right lumbar region—irregular rigors—night tolerably calm—somnia lency rather than sleep—sub-delirium—vomiting much less—much thirst at intervals.

On the 23d, in the morning, the intellectual faculties were in a state of integrity—the pulse was small, weak, irregular—the belly did not seem to be painful. Emollient drinks were ordered, with sinapisms. About ten o'clock syncope came on, which was soon followed by death.

*Dissection.*—On opening the abdomen, a pyramidal body, the appendix vermiformis, three inches long, and about an inch in diameter at its base, was observed in the right iliac fossa: it was of a bluish black colour in its whole extent, directing itself towards the inguinal ring, which was much dilated. The mucous membrane of the appendix was considerably thickened, of a silvery white near the cæcum, and black and disorganized in the remainder: its parietes were three lines thick. When opened from its external side, the cæcum was found very healthy, and even as far as the opening of the appendix. The intestines which were very much distended with flatus, were in a

natural condition—but the mucous membrane of the stomach presented slight traces of phlogosis: the other organs offered nothing remarkable.

*Remarks by M. Villermay.*—These two cases seem to belong to the same disease—for the circumstance of an inguinal hernia in one of them did not effect any remarkable change in the nature of the affection, nor even in its progress, as the ring was free, the hernia well reduced, and there was no sign of internal strangulation. It is possible, however, that the appendix of the cœcum having previously formed part of the hernia, had thus acquired its extraordinary size: I say it is possible, because, on examining the ring and scrotum, they exhibited no sensible traces of this hernia. So that these two cases, although they present some difference in their form, appear essentially the same.

In both cases, we see a man in the vigour of life, endowed with a good constitution, suddenly struck, in the midst of perfect health, with an inflammation of the most acute nature, the fatal termination of which was most rapid. In one as well as in the other there was no agony—on the contrary, a few moments before death, there was an apparent improvement, with a deceitful calm.

The treatment, equally rational, was equally unsuccessful. If dissection exhibited some difference of appearance, the essence of both was the same: the same organ, the appendix of the cœcum, affected in the same manner, and inducing death with nearly equal rapidity: in both, the whole of the appendix was gangrenous, and the gangrene extended, accessorially and in very narrow limits, to the surrounding tissues, respecting the whole extent of the peritoneum, the intestinal mass, the interior of the cœcum, and all the other viscera. It seems very probable that the phlogosis of the mucous membrane of the stomach depended upon the sympathetic irritation, whence arose the vomiting: this accounts for the more intense redness of that membrane in the first case, where the vomiting was more marked, at least towards the end of the disease. But how is it that the inflammation of an organ of so small a size, and of so limited an importance, could cause death so speedily without any peritonitis? This we are unable to explain. We are equally ignorant whether the affection of the appendix would be constantly followed by results as speedy and unfortunate.—*Archives Générales, Juin, 1824.*

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*Case of Effusion of Blood into the Pericardium, by Dr. Del Chiappa.*—The subject of this case was a cook, robust, twenty-six years of age, and plethoric. He complained of difficult, stertorous, short, and wheezing respiration—pulse unequal—pain behind the sternum and towards the shoulders—dry cough

and bloody spitting. The disorder was first viewed as bronchitis, and afterwards as disease of the heart.

*On Dissection*, a very considerable accumulation of blood was found in the pericardium. After a careful examination, "some of the *vasa vasorum* were found to have opened externally, and consequently to have furnished the extravasated blood."—*Giorn. di Fiscica, lier Bimest. 1824.*

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*On Rupture of the Heart*, by A. L. J. Bayle.—From the dissection of a case which fell under his care, and an accurate examination of those related by Morgagni, Bohnius, Bonet, Senac, Morand, Ferrus, Bland, Rostan, Andral, and others, M. Bayle has drawn the following conclusions:—

1. That of nineteen cases of rupture of the heart, fourteen occupied the left ventricle, and principally its anterior surface near the apex—three the right ventricle—one the apex—and another the inter-ventricular septum,

2. That in the majority of cases the heart was remarkably soft, and in some cases of a brownish colour around the perforation.

3. That of ten patients affected with rupture of the heart, one was between 50 and 60 years of age, another between 60 and 70, six between 70 and 80, and two between 80 and 90.

4. That of the same number of patients, eight died instantly, one at the expiration of about two hours, and another at the end of fourteen.—*Revue Médicale, Juillet, 1824.*

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*On Softening, with Extenuation and Destruction of the Mucous Membrane of the Stomach*.—M. Louis, who is already known to our readers, has lately read a *Mémoire* before the *Académie Royale de Médecine* on the lesions mentioned at the head of this article, in which twelve cases are related, and the following reflections drawn from them:—

In the twelve cases the size of the stomach was various: in four it was more contracted, and in six larger than ordinary. Externally it presented nothing remarkable: internally, in some parts of its surface, it was of a pale white, but more commonly of a bluish colour, either continuously or disposed in long and narrow bands, or even in more or less distant patches of an irregularly rounded figure.

This bluish appearance struck the observer at first sight, and the parts where it was situated were perceptible both to the sight and touch above the level of the surrounding parts. But whilst in cases of ulceration of the mucous membrane the edges of the ulcer are smooth and perpendicular, a very marked depression only was observed at the point of contact between the portion of the mucous coat, which presented the appearance in question,



and that surrounding it. The mucous membrane in those points which corresponded with the lesion was pale, extremely thin and soft, and transformed into a sort of glairy, pale, semi-transparent mucus, of the thickness of the mucous tunic of the colon, sometimes less; so that, if very great attention had not been paid, it might have been believed in many cases that the mucous membrane was entirely destroyed, and the cellular web exposed. Frequently, indeed, this destruction existed to a small, rarely to any considerable extent. The vessels distributed on the surface of the sub-mucous tissue were very apparent, large, and empty. Neither in those parts where the mucous coat was destroyed, nor in those which had undergone the transformation above mentioned, was there found any mucus. Instead of the whitish and bluish tint, the softened and thinned mucous coat was sometimes of a pale and opaque white, red, or even grey: sometimes, again, the whitish or bluish tint was mixed with reddish or blackish spots, which seemed to show that the colour was not one of the essential characteristics of the lesion.

When it occurred under the form of broad and narrow bands, it was almost equally spread over the whole surface of the stomach: when, on the contrary, it was in one patch, it occupied the great extremity of the stomach, was rarely confined to the great sac, and sometimes extended nearly from the cardia to the pylorus.

With two exceptions, the sub-mucous tunic was healthy, and of a proper firmness: in certain cases it seemed denser than common; but the difference did not seem sufficiently evident to enable M. Louis to affirm any thing positively on this point. The muscular membrane was softened under the same circumstances as the sub-mucous.

Extenuation, with slight softening—thinness, with considerable softening of the mucous membrane—its destruction, as well as that of every tissue of the stomach to a certain extent, with the exception of the peritoneal coats—were sometimes met with in the same individual, exhibiting the progress of spontaneous perforation of the stomach.

Besides the lesion just described, the mucous tunic presented also, in the remainder of its extent, peculiarities which it is important to make known: thus, it was found in four cases of a delicate, or more or less lively red, and in two others of a greyish appearance. Sometimes this red colour was extremely vivid in the neighbourhood of the discoloured, softened, or thinned mucous tunic; and the part of the membrane in which it was observed was thin, and almost as soft as the portion so considerably disorganized, with which it was continuous. In several cases, it was irregular and tuberculated at its surface, or was affected with more or less deep ulcerations.

When the softening, with extenuation of the mucous membrane, was witnessed in the œsophagus, it occupied the lower part of it, presenting a reunion of the appearances already mentioned, and a greater or less lesion in its whole substance.

Although there was probably but little connexion between the state of the stomach and that of other organs, it may not be amiss to throw a glance over the latter.

In the *colon*, the mucous membrane was commonly pale, sometimes of a more or less vivid red to a certain extent, and softened in every case in which this colour was observable; ulcerated in several others; it was ulcerated in the lower portion of the small intestine in almost every individual: natural in three only. In all the cases related by M. Louis, there were complications with other lesions.

*Symptoms.*—At the commencement of the disorganization above mentioned, the digestive organs had been more or less deranged in a greater part of the individuals: in some the digestion had been disordered for a great number of years: in others, it had been so for four or five, and the falling off in flesh and of the appetite, might be dated from the same epoch. In a fourth case, the individual had laboured under pains at the epigastrium for a very long time, and acidities after eating, for a year and a half; whilst in other cases the loss of appetite had only preceded the appearance of the symptoms for some months. One of the patients had been intemperate immediately before the commencement of the epigastric pains; another lived for six months in misery; and one of them seemed to be in a state of nearly perfect health, his digestive organs being unimpaired, when the following symptoms presented themselves.

Whether there had or had not been derangement of the digestive passages for a certain period, or whether the disease of the stomach was simple or complicated, primary or secondary, the patients experienced, from the commencement, a more or less considerable diminution, or even a total loss of appetite, pains at the epigastrium, shivering, followed by heat, thirst, and, after a more or less considerable period, (from a few days to a month or more,) nausea and vomiting: or else, these latter symptoms, accompanied by anorexia, thirst, and fever, showed themselves, and the pain at the epigastrium did not appear until after one or more weeks; finally, in other cases, nausea, vomiting, and pains in the epigastrium, appeared at the same time. These symptoms continued, with more or less violence, until death: sometimes in a continuous manner, and almost without interruption: commonly with more or less considerable remissions. In several cases they manifested themselves with much intensity from the commencement; in others, equally numerous, they developed themselves in a slow manner, and did not

assume much violence until a certain period of their duration. Sometimes, also, the disease arrived at its last stage without having given place at any time to serious symptoms.

Each of the above symptoms presented itself in very variable degrees; thus, in some, the *thirst* was only slight until a few days before death, and very probably was the effect of some new affection. In others, it was always very great, and to such an extent that, at an advanced stage of the disease, nine quarts of drink taken in the twenty-four hours, were scarcely sufficient to quench it. Some patients could only bear cold drink; others tepid, or, after not having been able to take the latter for a long period, they went back to the cold, and at last did not attend to the thirst for the fear of vomiting, so susceptible had the stomach become.

The *appetite* varied not only in different individuals, but also in the same. In the majority of cases there was, from the beginning, as was before observed, anorexia; sometimes, but much more rarely, the appetite was diminished only a few days before death; or else, after having disappeared for some time, it returned, and again ceased, according as there was more or less difficulty of digestion.

In all the patients there was *nausea*, and *vomiting* in nine of them. These occurred from the commencement, either some time after the appearance of pain or at the same period. They continued until death, with more or less marked remissions: sometimes they commenced with extreme violence: more frequently, however, they augmented gradually. At a certain period of the disease they were provoked by the slightest causes, the mildest drinks, sugared water, pure water itself: they resisted every thing, even the means, to all appearances, most proper for arresting them; or rather, such means as had appeared to relieve them during some days speedily lost their efficacy.

*Pain at the epigastrium* existed in eleven out of twelve. In some it was very marked, and occasionally so distressing, that the patients ascribed all their disease to the epigastrium: in others, it was much less violent, was manifested only by obstruction, pricking, and a sensation of constant weight at the epigastrium: occasionally these were accompanied by a feeling of heat, and in such cases the mucous membrane was found softened and extenuated, pale, or of a more or less vivid red. Pressure increased those pains so much that some patients could not bear the least weight on the epigastrium, and kept the part uncovered; they were subject to longer or shorter remissions, and became exasperated at very advanced periods of the disease: now and then they were momentarily relieved by the Seltzer water, and at others by an antispasmodic potion without ether. Opium did not appear to have any influence over the degree of



their intensity : they were proportionate to the nausea and vomiting.

The state of the *tongue* presented nothing certain : it was in the natural state in four patients ; slightly red at the tip in three others ; villous and reddish in one, in whom it preserved nearly the same appearance through the whole course of the affection, and also in another, in whom it was red at the tip for eight months, with whitish villousities at the centre, and always moist, as in the other cases.

*Diarrhœa* existed in almost all the cases, without its being referable to the disease of the stomach ; phthisis existing to a greater or less degree in the majority of cases.

In the midst of these disorders the exercises of the *intellectual faculties* and of the organs of sense continued without alteration.

Headach only existed in a female, who was labouring under cancer of the uterus, and in three other individuals, one of whom had habitual headachs for a long time : the two others succumbed, one under hydrocephalus acutus, the other under softening of the brain, and complained only of cephalalgia in the last periods of the disease, viz. at a time which ought to be referred to the beginning of the cerebral affection.

*Pains in the limbs* were observed in one case only ; and the only one in which they existed in the articulations was in a female who had them from the age of puberty.

The *features* of the face presented nothing particular in the absence of pain ; but they assumed the expression of uneasiness and suffering as soon as they were felt, nearly as in colic.

It was difficult, in consequence of the complications, to estimate the influence of the disease on the *state of the strength* : nevertheless, when it showed itself in subjects labouring under cancer of the uterus or phthisis at a very advanced stage, the weakness did not appear to be much more considerable than in those cases in which the disease was simple. In other respects, it was also the same : thus, one of the patients did not give over working until twelve days before death. A woman, who was the subject of another case, continued her occupations for the first five months of the disease ; and one in whom the mucous membrane of the stomach was three quarters destroyed, worked until within three days of her death. But when the progress of the disease was rapid, the vomitings were accompanied with copious alvine evacuations, and the lapse of the strength was very prompt : in another case, where the constipation had been constant, the weakness was considerable, but proportioned, it appeared, to the defect of alimentation.

The *shivering* and *heat* experienced by some patients at the beginning and in the following days, would seem to indicate that the

circulation was actively influenced by the disease of the stomach: this, however, is doubtful; for in one case there was only a feeble acceleration of the pulse, although the disease commenced and progressed with violence.

Thus, on comparing the lesions of the diseased organ with the symptoms which were observed, we see on one part, the mucous membrane of the stomach thinned, softened, and destroyed to a greater or less extent: the disorder sometimes propagated to the subjacent tissues: and on the other part, anorexia, loathing, nausea, vomiting, and pains commonly very acute at the epigastrium: but none of these sympathetic phenomena which are regarded by some as the inevitable effect of severe or trifling affections of the mucous membrane of the stomach, and as the only means of knowing them. Here all is clear and precise: the disordered function, the seat of the pain, indicates at the first the injured organ; no other viscus expresses better or more acutely its suffering. The symptoms of pneumonia do not exhibit in a more evident and certain manner inflammation of the lungs, than the phenomena mentioned point out, in the majority of cases, a dangerous affection of the stomach. The patient who is spoken to of his sufferings does not answer, that he experiences no uneasiness, that he does not *suffer in any part*: he points out positively the stomach as the seat of the disease: *it is there where the whole of his disease is situated*. It matters little whether the affection be simple or complicated; the pain at the epigastrium is always the same: and whatever may be the complication, whether the disease proceeds violently, is accompanied or not with acute enteritis, it becomes quickly mortal, or, manifesting itself by somewhat severe symptoms, is prolonged for a considerable time, the symptoms varying only in their degree of intensity: the pain always reveals the diseased organ.

We have seen this obtuse pain, it is true, persist for a whole year, and almost until death, in one female, although the progress of the disease had been very slow, nearly uniform, the accidents slight, and the patient continued her occupations until three days before death. Can it henceforth be believed that the mucous membrane of the stomach is either insensible, or that it shows its pains in a manner different from other organs? We dwell upon this point, and upon the other symptoms described, viz. the nausea and vomiting, because they bring the stomach under the common law, and exhibit it to us expressing its sufferings, like other organs, by the more or less marked disorder of its functions.

*Progress and duration.*—In general the disease ran through its different periods with slowness; its duration being considerable, and it is not improbable but that it would have been still more so had it not been for the complications which existed.

In one case it was three months and a half in duration, in another six, and thirteen in a third, without a corresponding difference being observed in the state of the organs after death. Instead of that, the disorder was more considerable in the first than in the last case, where there was only thinness and softening of the mucous membrane; whilst in the other, the disorder extended to the whole thickness of the parietes of the stomach. Sometimes, however, the progress of the disease was rapid, truly acute, and death was the result rather than any other lesion: thus, it appeared to have scarcely continued twenty days in one case, in which the mucous membrane was profoundly altered, and even entirely destroyed in several points. Its progress was almost as rapid, and the symptoms equally severe, in another case, where the lesion of the mucous tunic was less advanced.

In the chronic form, the disease, like every affection of long duration, had not an uniform march: it seemed sometimes stationary, or even had a tendency to be cured; but the apparent improvement was quickly followed by exacerbations. In one case, after the disease had continued for five months, the patient recovered his appetite for three or four months, and appeared to enter in convalescence: the disease, however, proceeded, although with slowness, with equal certainty, to its fatal termination.

*Diagnosis.*—We have seen that the affection of which we are treating developed itself most commonly in those whose appetite and digestion had been disordered for a considerable period: that at its beginning there were fever, nausea, vomiting, and more or less complete anorexia; that these symptoms were accompanied, preceded or followed by pains at the epigastrium, as they appeared in almost every case: that nausea and anorexia were never wanting, that pain at the epigastrium was observed eleven times out of twelve, &c., and we have just seen that these symptoms persisted with longer or shorter remissions until death: that in almost all cases the progress of the disease was slow: we have besides, remarked, that it manifests itself in the course of chronic affections, and most commonly in phthisis pulmonalis, which it rarely precedes: every time, therefore, that we meet in persons labouring under chronic affections, and having had for a long time difficult digestion, with diminution of appetite, the symptoms above indicated, we ought, when they have existed for some time—twenty days, one month, six weeks, for example—to suspect the existence of softening, with thinness of the mucous membrane of the stomach. In the cases where these symptoms declare themselves without previous disorder of the digestive functions, with a diminution of greater or less duration of the appetite, and in subjects exempt



from chronic diseases, the suspicions would, doubtless, be less founded: however, as these suppositions were met with partly united in some cases, we think that if the symptoms mentioned had persisted for six weeks or two months, we might be almost sure of the existence of the disease.

In those cases in which the symptoms are but little marked, where there is only nausea without vomiting, simple obstruction, or an obtuse pain at the epigastrium—if especially the emaciation be slow, and the patient preserve his strength—the diagnosis is necessarily uncertain: for it might be considered as a chronic cancer of the stomach, and the absence of any sensible tumour in the epigastrium would be far, as is well known, from removing all our doubts.

We do not pretend that the symptoms above mentioned are the only ones existing, or that the diagnosis of the disease must rest upon them alone: our conclusions are merely the expression of facts which we have observed; and we do not doubt that fresh observations may lead to new signs, or modify those which we have just pointed out in some manner. We must recollect, finally, that the disease is sometimes latent, and that the symptoms being wanting, the diagnosis is absolutely impossible. The following is an instance of this kind:—

A woman, aged seventy-seven years, who inhabited *La Salpêtrière* for eighteen months, and had quitted it only for two, attributed to the diet of the house the little appetite which she had felt for some time. Some charitable persons who attended to her tried to make her take some delicate nourishment, but scarcely had she swallowed some mouthfuls, when she found herself satiated: she took soup only with pleasure: there was neither nausea nor vomiting, nor pains at the epigastrium (at least, those who saw the patient constantly and several times a-day assured me of it): she had had a cough for about twenty years, complained only of her *asthma*, and was carried, at the third month after her exit from *La Salpêtrière*, to the *Hôpital de la Charité*, where she was unable to render a satisfactory account of her condition, and died eight days after her arrival, without having had any vomiting. On dissection, tubercles and tuberculous excavations were found in the lungs; the heart was sound, the liver in its natural condition; the stomach slightly greenish at the exterior of the great sac. Internally, in the corresponding place, and of the size of the hand, it was of a greenish or bluish white colour, and traversed at this part by a great number of large empty vessels: the mucous membrane, where the greenish colour existed, was softened and devoid of consistence: in the majority of the portions where the colour was white and bluish it was wanting: in the remainder of its extent it was of a fawn colour, and of a natural

thickness and consistence; its edges gradually settled down to the circumference of the diseased part: the demarcation between the injured portion and that which was not so was, however, extremely evident.

With respect to the *nature* of the disease, if we consider the symptoms, we can only esteem it an inflammation of the mucous membrane of the stomach—a true gastritis; but the condition of the mucous membrane, thinned, pale, and sometimes destroyed, may appear less conclusive. Nevertheless, on examining with a little attention these three principal circumstances, the opposition which appears to exist between the symptoms and the lesions observed seems to disappear. In fact, without speaking of the softening which is the common consequence of intensely acute inflammation, the extenuation and even the destruction of the mucous membrane are favourable to the idea of inflammation, as we every day see the skin ulcerate, become thin, and entirely disappear after the longer or shorter application of a blister. As regards the paleness it is not constant—the mucous coat, softened and thinned, was, we have already remarked, gray in one case—uniformly red in another—and in a third it followed the affections of another part almost equally thinned and softened, but red, which, in proportion as it became distant from the point mentioned, was successively more consistent and thick. And should even the paleness be constant, nothing against our proposition could be drawn from it—the paleness of the tissues being inevitable at a period approaching their destruction. Finally, we may observe, that in the points where the lesion which occupies us did not exist, we found in several cases the mucous coat unequal, tuberculated, or ulcerated, and this state as we shall soon see, appears to be the result of inflammation—so that if on one side the paleness does not repel the idea of inflammation, the redness sometimes witnessed in the case of softening with extenuation, the extenuation itself, and the state of the mucous membrane in the parts contiguous to the lesion, are favourable to it.

*Prognosis.*—We have not in any case observed the disease, in its state of simplicity,—in the majority it was secondary to a mortal affection, and the rules of prognosis may be regarded for these reasons as of very little importance. Nevertheless, if it be considered that the lesion which occupies us is sometimes a principal disease, and may cause death at the moment when it is least expected—that when it is accessory to a disease inevitably mortal, it may still considerably accelerate its fatal termination—it must be allowed that a correct prognosis is of very great importance. Unfortunately we do not possess any elements for it—we scarcely know the characteristic symptoms of the lesion—we are ignorant of the symptoms proper to its

different degrees—we do not know when it is inevitably mortal, when it is not yet beyond the resources of art, and all this would be necessary to form a judgment respecting the issue of the disease.

Experience is limited to showing, in the lesion which occupies us, an extremely serious and probably mortal lesion, when the symptoms which may cause it to be recognised have continued a certain time, and the susceptibility of the stomach is such that it can retain nothing.

*Treatment.*—The uncertainty of the prognosis causes that of the treatment to be anticipated, for it must differ according to the more or less advanced state of the lesion—and we have just observed that we want symptoms for knowing its degrees. Whatever it may be, if the disease, accompanied with a little fever at its outset, and more or less marked gastric symptoms, induces us to exhibit an emetic, and this emetic has been given without success, that mode of treatment should be renounced. Owing to the pain and heat at the epigastrium, the more or less marked pyrexia, the commonly excessive thirst, &c. recourse must be had to the antiphlogistic treatment, which must be proportioned to the strength of the individual. But when the symptoms have already persisted for a long period, when the susceptibility of the stomach is extreme, (in which case the lesion of the mucous coat may be suspected to be irremediable,) we can only employ palliatives.

It must be observed, however, with relation to the treatment of the first epoch, that the antiphlogistic plan was employed somewhat largely in one of the patients at this period, without preventing the lesion of the mucous membrane of the stomach from proceeding as in other cases—and, as for palliatives, we must also recollect that at an advanced period of the disease all the means employed have been nearly equally unsuccessful.

*Causes.*—We have already stated that in some cases the onset of the disease was manifest. The only two cases in which it appeared to have been occasioned by evident causes, are favourable to the opinion which we have emitted respecting its nature—one of the individuals had given way to excess in wine and brandy for three days in succession—the other lived in misery for six months, when the first gastric symptoms developed themselves.

It must not, however, be forgotten, that of twelve patients eight were females—that we made our observations in wards where there was an equal number of persons of both sexes—and that, if experience should show that the disease in question is more frequent in women than in men, it must also be concluded, that its most common exciting causes are not excesses at



table, the women being less addicted to them than men.—*Archives Générales de Médecine, Mai, 1824.*

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### MIDWIFERY.

*On the Causes of Abortion and on the Means of Prevention*—By M. Ant. Duges.—After an interesting inquiry on this subject, M. Dugés recapitulates as follows :

1. That abortion is commonly the consequence of an universal *effort*, with determination of the blood towards the uterus.

2. That this *effort* does not act in directly exciting the contractions of the uterus, but in giving it the contractility of which it is wanting.

3. That in abortion occasioned by violence done to the uterus, or by the evacuation of the waters, a sort of inflammation is required to produce the same effects as the *efforts* produce in spontaneous abortion.

4. That abortion differs especially, physiologically speaking, from parturition at the full period, inasmuch as, in the latter case, the uterus enjoys a sufficient degree of contractility—as it has no need of aid, and as *molimen* or febrile disposition only diminishes its exertions.

5. That the means adopted for arresting the *molimen* are the most proper for preventing abortion, and that bleeding holds the first rank amongst them.

6. Finally, that from the utility of bleeding for facilitating accouchement at the full period, one cannot argue against its efficacy for the prevention of abortion.—the circumstances being not only different, but even wholly opposite.—*Revue Médicale, Juillet.*

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### CHEMISTRY.

*Detection of the Hydrocyanic Acid in the Human Body.*—M. Lassaigne has published a long, but very interesting, paper on this subject, of which we can now do no more than give the conclusions deduced from his experiments and observations ; which are these—

1st. That, by chemical means, it is possible to recognise, in a distilled aqueous liquor, the presence of hydrocyanic acid, in the proportion of one 20,000th part of the weight of the water.

2d. That in animals poisoned by this acid, it is possible, at the end of eighteen and forty-eight hours, or even a longer period, to detect its presence.

3d. That it is in the viscera where this substance has been primarily taken, that it is to be discovered.

4th. That in the brain, heart, and spinal marrow, it has not been possible to detect the most minute quantity, although the odour would induce the suspicion of its presence.

M. Lassaigne is aware that M. Itard's experiments led him to the conclusion, that hydrocyanic acid might be spontaneously developed in the body—but as the sense of smell alone has been appealed to as a proof of this fact, M. Lassaigne questions its being correct—especially as M. Robiquet has shown that the oil of the lauro-cerasus, which has a strong odour of bitter almonds, does not owe this to the small quantity of hydrocyanic acid which it contains, but to a volatile oil. Added to which, M. Lassaigne has carefully examined the evacuations of the human subject—the matters contained in the intestines of various animals, especially of dogs, who have died of inflammatory diseases—as well as animal substances in different degrees of putrefaction, and has never been able to detect the presence of this acid.—*Revue Medicale, Juin.*

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*Analysis of the Male Fern Root.*—M. Morin, of Rouen, informs us that this root, which is successfully employed as an anthelmintic, owes its virtue to a fatty substance, capable of being converted into a soap, of a nauseous smell resembling that of the root, of a very disagreeable taste, heavier than water. The root contains also gallic acid and acetic acid, some sugar, tannin, starch, and a gelatinous matter insoluble in alcohol or water, some woody matter, and the salts usually found in ashes. M. Morin believes this fatty substance to be formed of a fixed and a volatile oil—but he has not obtained yet sufficient proofs of this.—*Annales de Chimie, Juin.*

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*Analysis of the Upas.*—MM. Pelletier and Caventou, in a memoir read at the Royal Academy of Medicine, announce the presence of strychnine in the upas. In the upas anthiar, they have not discovered this substance, but a peculiar deleterious principle, soluble in alcohol and water, and which does not possess alkaline properties. It appears from the result of these gentlemen's observations, that the red colour produced by the action of nitric acid upon strychnine, does not depend upon a vegetable alkali—that the intensity of this colour is in an inverse ratio to the purity of the strychnine, being the effect of a foreign substance, with which the alkali is intimately united, both in the nux vomica and the St. Ignatius' bean.—*Journal de Pharm. Juin.*

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## MISCELLANEOUS.

*Dr. Gordon Smith on the Question of Infanticide.*—There is no point in forensic medicine on which so much perplexity exists, and for the elucidation of which so little has in reality been done. He is persuaded that this is, in great measure, owing to want of due pains being fairly bestowed—for, whether the ex-

isting state of knowledge be estimated positively or negatively, no one, who has at all looked at the question, can be unaware that there is much work to be gone through ere satisfactory conclusions can be formed.

It is, perhaps, impossible for any individual—at least, Dr. S. feels that it is beyond the compass of his own power—to do justice to the problem—as few who possess the means can be supposed to have the leisure requisite to collect, arrange and apply the necessary data. But he relies on the zeal and liberality of the profession to aid him in so important an undertaking. He therefore solicits from those who may have opportunities of handling the bodies of new born infants, a few items of information, which he hopes will not cause much trouble, and the aggregate of which he trusts he may be enabled to apply with precision and advantage, so that the truth may be established either the one way or the other; and to its due amount, with regard to certain doctrines that have been bandied about for many years, without any fair or satisfactory estimate as to their practical import.

Simple answers to the following queries form the object of the present application, premising that the subjects chosen must be perfect—that is, of ordinary development; free from redundant parts, mutilation, disease, or putrefaction; and such as are unquestionably of the class to which they may be assigned. If in any particular instance there should be points in morbid anatomy, which, in certain cases, might greatly assist in coming to appropriate conclusions, they should be stated.

The subjects being classed—first, as *Still-born*, or *such as have never respired*—and secondly, as *Alive-born*, or those that have come into the world alive, but have died within twelve hours, the queries may be attended to in the following order:

Class I.—*Subjects Still-born.*

Required—

1. The sex.
2. Period of gestation when born.
3. How long *known* or *supposed* (as the case may be) to have been dead *in utero*.
4. The cause of death.
5. Nature of the labour.
6. Exterior aspect of the body.
  - a. As to colour.
  - b. ——— integrity.
  - c. ——— development.
  - d. ——— formation.
  - e. ——— marks of violence, ecchymoses, or any peculiarity.
7. Length from the vertex to the under part of the heel.



8. Point at which the middle length of the body falls, to be given as regards its distance from the umbilicus.

9. Weight of the whole body, prior to any interference with its integrity—to be accurately given in ounces and fractions, stating the species of weight used.

10. Aspect of the lungs *in situ*, on opening the thorax, and form of the diaphragm.

11. Weight of the lungs, separated from all attachments, avoiding the spilling of contents.

12. Weight of any fluid that may escape from the trachea, on holding the lungs over a vessel in the scale, in an inverted position, but *not squeezing* them—and the fluid described.

13. Result of placing the lungs in a washing basin of water, first entire, then separately—i. e. the right and left lung each by itself; noting if there be any difference of buoyancy in either, and which—as also, when cut in pieces, noting any morbid appearances in these organs.

14. Weight of the liver, &c. managed in the same way, with the exception of placing it in water.

15. State of the alimentary canal in regard to contents.

16. State of the urinary bladder.

17. State of the gall bladder.

18. State of the ductus arteriosus and venosus.

19. Colour and consistence of the blood—specifying the part or parts of the body in which the observation may have been made.

#### Class II.—*Subjects Alive-born.*

##### Required—

1. The sex.

2. Period of gestation when born.

3. First actions—

*a.* As to crying, or manifestation of the respiratory process.

*b.* The state of the umbilical cord.

*c.* Evacuations *per anum et urethram*.

4. Cause, manner, and time of death.

Then assume the queries as in the other case.

It is neither expected nor desired that any individual shall take the trouble to furnish *a list*. One case, properly investigated and clearly stated, by an intelligent hand, will be worth hundreds of such as seem to have been collected abroad—one hardly knows how. In order, however, to impart necessary satisfaction as to the authenticity of the materials, it will be essential that those who may be pleased to transmit the result of their inquiries, should verify them with their signatures; and in all cases, where practicable, Dr. S. will scrupulously acknowledge his obligations.

Communications may be forwarded for Dr. Gordon Smith, to the care of Messrs. Underwood, 32, Fleet-street, London—and he leaves the economy of transmission entirely to the convenience and discretion of correspondents.—*London Medical and Physical Journ.*

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*New work on the Nerves.*—The papers printed in the Transactions of the Royal Society during the last three years, detailing the Discoveries of the Functions of the Nerves, will be immediately republished with notes, and a general introductory view of the nervous system, by Mr. Charles Bell, Professor of Anatomy and Surgery to the Royal College of Surgeons, and Surgeon to the Middlesex Hospital.—*ib.*

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*Mascagni's Anatomical Plates.*—Dr. Grotanelli, Professor of Clinical Medicine at Sienna, in a discourse lately delivered before the Royal Institution of Sciences at Paris, observes that the drawings of the celebrated Mascagni, from which the plates of his “Grand Anatomy” were taken, were finished in the year 1815, most of them as early as 1810—and that, among others who saw them in Italy in this state of preparation, Baron Cuvier may be particularly mentioned. He complains of the piracy committed upon this property by Professor Antomachi, whose plates were identically the same with those of Mascagni—and the object of this discourse is to rectify this mistake, which had received some apparent sanction from an account of these plates published by the Institution in Paris.—*ib.*

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## ADVERTISEMENT.

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THE Publishers of the Philadelphia Journal of the Medical and Physical Sciences have the pleasure to announce, that they have made arrangements, by which they have secured the co-operation of Drs. Dewees and Godman in the continuance of this Work. It has long been a source of regret to them, that the increasing duties attendant on this publication, have encroached on the valuable time of Professor Chapman, who, with characteristic liberality, has never allowed them to offer him any remuneration for his valuable and important services.

By the present arrangement, which will commence with the ensuing number, Dr. Chapman will be spared many of the inconveniences inseparable from editorship, which will enable him to enrich the work with his own excellent and desirable productions, while the active exertions of all the gentlemen concerned, will insure an extension of importance and usefulness to this Journal, most advantageous to the numerous and growing list of its readers.

In addition to the arrangements connected with the editorship, the Publishers assure the Subscribers, that their own efforts will be unremitting to secure to the readers all the benefits that can result from a punctual appearance and speedy distribution of the Journal.

H. C. CAREY & I. LEA.





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ART. I. *On the Yellow Fever of 1823, in Natchez, Mississippi.*  
By A. P. MERRILL, M. D.

CAUSES AND HISTORY.

THE months of April, May, and June, were only remarkable for being uncommonly wet and rainy. By the frequent and heavy showers that fell during this period, the country was completely deluged, and the earth every where saturated with water. About the 1st of July, the weather became suddenly very dry and warm, and the streets of the city were soon filled with dust; thermometer ranging from eighty to ninety-three degrees. This weather continued, with little variation, until the 25th of August, at which time there fell considerable rain, accompanied with thunder and lightning, and followed by cool pleasant weather, with occasional showers. From the 10th to the 25th of August, the thermometer was regularly above ninety degrees every day. Light breezes generally prevailed during the heat of the day from the south-west; but the atmosphere was frequently so stagnant and sultry, as to render the heat exceedingly oppressive. Every inhabitant of the city seemed to feel very sensibly its effects, and a general

state of languor and listlessness prevailed among all classes, which was plainly perceptible by the manner in which all their ordinary employments were executed.

Among the first of the causes to which this epidemic was assigned, were the exhalations from marshes on the opposite side of the Mississippi river. This river having been higher this season than was ever before known, except in 1815, nearly all the lower lands on the whole coast were inundated, those opposite Natchez extending thirty or forty miles westwardly. The gradual falling of the river commenced about the 25th of June, and the low lands generally became visible about the 10th of July, when the first appearance of extensive vegetation was observed opposite Natchez. The inhabitants of these inundated districts were subject to light attacks of intermittent fever, during the summer and autumn, but very few cases of aggravated disease occurred among them. It is an old and common remark with these people, that they enjoy much the best health in the autumn of those years of the greatest floods; and this observation applies as well to New Orleans, and the different villages situated upon the low banks of the river, as to plantation residents and slaves. The planters account for this, by attributing the sickly season to the effluvia arising from the decomposition of immense quantities of vegetable matter, the luxuriant growth of which ordinarily takes place early in the spring, and begins to decay about the middle of July. By such extensive inundations, vegetation is so much retarded, that a general decomposition does not commence until the exhalations are rendered innocuous by the lateness of the season.

Whatever explanation may be given to this phenomenon, certain it is, we have no satisfactory evidence that the exhalations from the Mississippi swamps, after an inundation, or any train of circumstances connected with them, have ever produced a deleterious effect upon the healthfulness of this city. Natchez being situated on an elevation of nearly two hundred feet above these low lands, with the broad and rapid current of the Mississippi river intervening,

protected in front by a bluff nearly as high as the tops of the houses, and surrounded on three sides by a high, dry, and healthful country, appears admirably shielded by nature from the influence of any external causes of disease. Besides, the well known facts, that the town has very frequently been healthy, while bilious fevers were prevalent on the opposite shore, and vice versa, that former inundations have never produced a deleterious effect, either upon the city, or the scattered population in its vicinity, similarly situated—and that no malignant epidemic has ever prevailed in Natchez previous to 1817, notwithstanding these inundations have been very common ever since the first settlement of the country—all tend to prove most conclusively, that no deleterious influence can be exerted over its inhabitants by the overflowing of the river.

The next cause of disease which it is deemed proper to notice, is the existence of a quantity of animal matter in a state of putrefaction, both within and near the city. It has been contended by the advocates for the efficiency of this cause, that the effluvia arising from two particular depôts of putrifying animal substances, were the principal or sole agents in the production of the epidemic. The one, a quantity of damaged bacon, stored near the eastern extremity of the town—and the other, a collection of filth and refuse matter, in a fissure of the river's bank, at the southwestern extremity of, and at a short distance from, the city. It is believed, however, that the doctrine of septic influence in the production of bilious and malignant fevers, is far from being well established. For, although it has often been contended, and not without an appearance of reason, that the fevers of hot climates are the product of vegeto-animal putrefaction, yet it has never been satisfactorily shown that animal exhalations alone have ever produced a malignant epidemic. The nature and origin of febrific miasmata not being well understood, it has been common to resort to this hypothesis, to explain the reason why malignant epidemic fevers occur in places where they are unusual, and because noxious agents are supposed to be pecu-



liarily liable to arise from substances that exhale a disagreeable odour. But it is now very clearly ascertained, that the peculiar constitution of the atmosphere, which is found capable of producing the most violent and destructive epidemics, does not generally possess any singular properties capable of being detected either by the senses, or by chemical analysis.

Butchers, who are certainly more exposed to putrid animal exhalations, than almost any other occupation, have been known, on some occasions, to be peculiarly exempted from disease during the prevalence of an epidemic. One remarkable instance is mentioned in Dr. Rush's Account of the Fever of 1793, in Philadelphia, where, out of nearly one hundred butchers, who remained in the city, only three died. Scavengers, and persons employed in burying the dead, also very generally escaped.

The epidemic yellow fever, which nearly depopulated the city of Pensacola, in 1822, has commonly been attributed to the importation of damaged cod-fish, and there were many concomitant circumstances which would go far to support this opinion. But it is a remarkable fact, that came under my own observation, that the United States troops, stationed in Fort Barrancas, consisting of about one hundred persons, were exposed, in very close, uncomfortable quarters, almost in the midst of nearly a whole cargo of this putrid fish, which had been wrecked upon the beach, and yet not a single case of fever occurred among them during the four weeks they were thus situated, and not until three weeks after the fish had been removed. At the same time, a battalion of infantry, that was cantoned one mile distant, in a dry, airy situation, was sorely afflicted with violent bilious fevers. The sailors who had been living on board this fish vessel for a number of months, in the West India seas and harbours, and in the midst of putrid exhalations, that were almost suffocating to a stranger, all arrived in Pensacola in good health, and only suffered in common with the other inhabitants, after a residence of three or four weeks in the city.

These instances not only afford very strong evidence against the doctrine of the febrific influence of animal putrefaction, but they go much farther. The occurrence at Pensacola, particularly, proves, so far as a single fact can prove, that exhalations from putrifying animal substances are a very sure protective against the effects of marsh miasmata. This corroborates some ancient statements of the plague having been checked in its ravages by killing all the domestic animals in a city, and strewing them about the streets to putrify.

If animal putrefaction had been the cause of the different epidemics that have occurred in Natchez, no good reason can be adduced, why they have not always originated *Under the Hill*, at the landing, where there is a crowded population, and where an immense accumulation of putrifying animal substances has existed for a long succession of years, in consequence of the great importation of pork, beef, &c. every spring, from the upper country. The quantity of putrid exhalations from this source, during the hot season, is so great, as to render an exposure to them almost insufferable to one unaccustomed to it; and yet, so far from these having ever produced a deleterious effect, it is well known that the portion of the population of the city residing near the landing, have always been exempted from the epidemics which have occurred here, until after they have raged for two or three weeks in every other part of the city.

It is a fact worthy of notice, and which is often repeated by the oldest inhabitants here, that twenty years ago it was very unusual to meet with any disease in this city more violent than intermittent fevers. Notwithstanding the very rapid growth of Natchez, the population of which is made up of emigrants from all quarters of the globe, its inhabitants actually enjoyed as much security from the attacks of fatal diseases, as those of almost any other town of the same magnitude in the Union, until the year 1817, when the first malignant epidemic made its appearance. It is deemed very important, therefore, that in the inquiry into

the causes of this first, and also of the two subsequent visitations, that proper notice should be taken of any new cause of disease, that might have originated immediately antecedent to that period. In doing so, it is believed that a very satisfactory explanation may be given to the important and melancholy change that has so recently taken place in the salubrity of this city.

Natchez was originally laid out upon very uneven, undulating ground, the superficies of which was composed of a firm vegetable mould, based upon argillaceous earth. The whole extent of the town was so cut up with irregular ridges and declivities, rising to the highest point near the centre, and descending both in front and rear, that the immediate discharge of water was favoured in both directions, and carried off by natural ravines. For the greater facility of communication, as well as to beautify the city, it was proposed to reduce its surface to some degree of uniformity by *leveling*. This work was first commenced with the principal streets in the autumn of 1816. These were laid off crossing the ridges and hollows on which the town was built, diagonally; so that by digging down in some places, and filling up in others, many of the lots and squares of the city, which before were drained spontaneously, were by these means made much lower than their surrounding borders, and consequently became the common receptacles of both water and filth. In some places, the hollows were cut off by raising a street across them, so as to obstruct the free discharge of water from the ridges, for the purpose of favouring a deposite of earth, and thereby saving the expense and labour of filling them up in the usual way, by carting dirt.

In this country, the spring months are almost invariably characterized by the fall of immense quantities of rain, while both summer and autumn are generally dry and warm. It necessarily follows, then, that all the low situations in the city, which are dammed up by the leveling of the streets, must become, during the rainy season, perfect marshes. The earth, which is rendered extremely loose and porous by recent removal, becomes saturated with



water, during the winter and spring rains, to a considerable depth, and is thus fitted for exhaling the most noxious miasmata, under the influence of the hot and drying sun of summer and autumn.

Such I conceive to be the true explanation of the melancholy change which has taken place within a few years in the salubrity of this city. Natchez, formerly both dry and healthful, has become, of late, little better than a cluster of marshes, exhaling, in every part of it, abundance of that poison which is so destructive in its effects, and yet so little known or capable of being perceived, that its true source is overlooked and neglected. The increase of mortality in this city has kept regular pace with the progress of street improvement—and such remarkable coincidences have occurred between these two subjects, as seem capable of convincing the most sceptical, that this is the true source from whence these calamities have originated.

Although the two first epidemics of 1817 and 1819 occurred during the prevalence of a belief in the contagiousness of the disease, and were commonly supposed to have had their origin in importation, still many entertained suspicions that they were produced by exhalations from the soil of the city itself. These were greatly confirmed by the return of the same disease in 1823, which made its appearance under circumstances that wholly preclude the possibility of its having been imported, and it is believed have entirely destroyed the credit of that antiquated and obsolete doctrine in this place.

During the winter of 1822-3, the city and surrounding country were remarkably healthy. The principal diseases of the months of March, April, May, and June, besides occasional cases of intermittent and remittent fever, were *measles* and *mumps*. Both these diseases were prevalent at the same time, and it was observed that they were unusually inflammatory, and generally required a free use of the lancet. In July, cases of common bilious remittent fever increased very much, both in number and violence. Measles and mumps also continued to prevail with inflammatory

symptoms. A number of people died with the former disease, and some few fatal cases of mumps occurred. Very little difference was observed between the character of the diseases of the city and the country during this period.

During the first week in August, cases of bilious fever became more numerous in the city, and were more violent than usual at that season. They invariably put on such inflammatory appearances as rendered copious blood-letting a necessary remedy in their treatment. On the 12th and 13th of August three cases of bilious remittent fever terminated fatally—one after four days illness, and all with malignant symptoms. This produced some uneasiness among the inhabitants, but the board of health, having examined into the attending circumstances, declared it to be their opinion, that there was “*no cause for alarm.*” On the 16th, two other deaths occurred, one after eight days illness, and which was reported by the attending physicians, “*malignant fever.*” On the 19th, another case terminated fatally, accompanied with *black vomit*. The board of health assembled in the evening, and addressed a circular to all the practising physicians, requiring their opinions whether there was “*a malignant epidemic prevailing in the city?*” The following morning they received replies from eight of the faculty, which were published. At this time the board expressed no apprehension of existing danger. On the 19th and 20th, it was supposed that more than fifty persons were attacked with the fever, and on the 20th, two died with the black vomit—which induced the board, on the 21st, to recommend a general removal from the city. From this moment the alarm became general, and the town was thrown into the most dreadful confusion and distress. More than two-thirds of the inhabitants are supposed to have left the city during the 21st and 22d of August.

#### SYMPTOMS.

It has often been contended, that what has been denominated malignant yellow fever is a distinct disease from the

common bilious fevers of this climate. But from the observations I have been able to make on this subject at different times, I can discover no just grounds for such distinction. The manner in which these epidemics commence and terminate their ravages, forms a strong argument in favour of the opinion, that they are in fact the same disease, differing only in degree. For such is the insidious manner of their approach, consisting only of an increase in violence of the common fevers of the country—and such, also, their uniformly gradual, and almost imperceptible decline, into the common remittent and intermittent fevers of autumn, that it is impossible ever to fix, with any degree of certainty, upon the time and place of their commencement, or of their termination. Indeed, I have never met with the man, who, at the *bedside*, would undertake to draw the line of distinction between the two diseases. Upon the first onset of the disease this seems to be impossible, and it is only upon its decline, or on the approach of death, that any one can determine with confidence the degree of malignity.

The epidemic yellow fever of Natchez, as that of other situations, differed very much in the appearance and nature of the attacks in different cases, depending probably on the different degrees of morbid action. To enable me to describe these different appearances with more clearness and precision, as well as to give a more distinct account of the mode of treatment pursued, I shall arrange the disease into two classes or varieties, into which it seems naturally to divide itself, and adopt the very appropriate appellations of “*Inflammatory*,” and “*Congestive*.” I am not sensible of ever having witnessed a form of the disease that could properly be called “*simple*,”\* and consequently can see no

\* The cases of disordered bowels, cutaneous eruptions, ulcerated sore throat, &c. that so often occur, during the prevalence of these malignant epidemics, and which seem to be produced by the same causes, do not partake sufficiently of the character of yellow fever to be classed as the simple form of the disease, as has been sometimes done. They are diseases *sui generis*, and no one thinks of calling such cases by the name of



benefit in making this third division of yellow fever, as applied to plagues and typhus by Faulkner and Armstrong. But, on the contrary, I am convinced that every grade and form of the epidemic, as it actually existed here, may be arranged with great propriety under one or the other of the above varieties.

### *The Inflammatory Variety.*

This was generally plain and distinct in the manner of its attack, and characterized by symptoms the least equivocal. It commenced with a feeling of universal languor, and a sensation of fullness and giddiness of the head, succeeded by a chill. This was soon followed by a hot fever, attended with acute pains in the head, back, and limbs—nausea and vomiting—involuntary sighing and weeping—eyes suffused and lids swollen—pulse full, strong, and frequent—skin hot and dry—tongue slightly coated, and hard, with red margins—obstinate costiveness, and sometimes a paucity of urine. There were some few cases of this variety that commenced with great exhilaration of spirits—constant talking and singing—and exhibiting no other appearance of disease than a quick and small pulse—a redness of the eyes—and a hot, dry skin. The most remarkable case of this kind was that of the lamented Dr. W. Such was the degree of exhilaration and pleasurable sensation in this instance, that he seriously objected to the use of remedies, declaring, “*he could not be very ill, as he was never so happy in all his life.*” This case assumed the character of a common inflammatory attack, after the loss of two pounds and a half of blood, and the operation of a purgative.

### *The Congestive Variety.*

Attacks of the congestive form were more insidious in their nature, and difficult to be understood. The symp-

the prevailing epidemic. In Natchez, these diseases rarely required the use of medicine.

toms attending this variety were sometimes so deceptive and fallacious, that cases were known to progress to a fatal termination before danger was apprehended. The patient was generally seized with great depression of both the animal and vital functions—laborious respiration—sense of weight and oppression at the præcordia—a yellowish red and dull eye—cool, dry skin—dull pains, or an uneasy sensation in the head, back, and limbs—giddiness—drowsiness—costiveness—tongue soft, moist, and nearly natural—pulse slow, oppressed, and sometimes intermittent—frequently a total suppression of urine and bile—and mental alienation. Some of the cases were so violent and rapid in their course, as to destroy life in twenty-four or thirty-six hours. They were attended from the commencement with an uncommon degree of oppression at the præcordia—difficult respiration—and great lassitude and prostration. Patients thus affected had much the appearance of a person in the stupor of intoxication.

It was not uncommon for the inflammatory variety to pass rapidly into the congestive, but this never put on the character of the inflammatory form, except under the operation of particular remedies.

In both varieties of the epidemic the functions of the liver, kidneys, and skin seemed always to be deranged. Sometimes there was a great increase of the secretion and flow of bile, sometimes a deficiency; and it was not uncommon to meet with a total suspension of it. The secretion of urine was generally scanty, and in the most violent cases often wholly suppressed. The skin, in most instances, was dry and husky, but in some violent congestive cases a glutinous perspiration made its appearance on the second or third day, very much resembling honey, both in smell and consistence. This was always considered an unfavourable symptom.

Black vomit, and a yellowness of the skin, were only casual appearances. The former was most common in congestive cases, but I have never seen it occur when the disease had been treated with very active depletion in the

commencement. The latter appearance was rarely observed to much extent except in the last stage of the complaint.

The common duration of the complaint was from three to seven days. A great majority of cases formed a crisis on the fifth day, and it very rarely continued beyond the ninth.

Natives of the country, old residents, and strangers, all suffered alike in this epidemic. There seems, indeed, to be no such thing here as *acclimation*, as in most other southern latitudes. For, such is the purity of the atmosphere in winter, that all the effects of habitual exposure to febrific miasmata during the summer, are as completely done away in the cold season, as by a removal to a more northern region. To be inured to the climate of New Orleans or the West Indies, constitutes no security against the diseases of Natchez.

*Negroes* were much less liable to the disease than *whites*. In them it generally assumed a mild inflammatory character, and proved quite tractable. Males and females of a middle age, and a robust, plethoric habit, and persons addicted to intemperance, were the greatest sufferers, and most liable to attacks of the congestive variety. Children under the age of puberty were seldom attacked with violence, and persons upwards of sixty years of age were almost totally exempted from the disease.

#### APPEARANCES AFTER DEATH.

In both varieties of this epidemic, the abdominal viscera were found to exhibit the greatest marks of disease, upon dissection. The stomach and intestinal canal were always more or less inflamed or gangrenous. The kidneys showed evident traces of inflammation or congestion, and were often in a state of mortification. The liver was often found engorged with blood, and easily lacerated. The gall bladder was generally filled with dark, viscid bile. In all violent cases, extensive appearances of inflammation or



congestion always existed, both in the abdominal viscera and the brain.

#### PROGNOSIS.

The prognosis was often exceedingly difficult and uncertain. The symptoms attending certain stages of the disease being very deceitful in their nature and appearance. It was sometimes the case in this fever, that the patient was pronounced to be out of danger, and both himself and his friends were congratulating themselves upon the prospect of a happy recovery; when, to their great astonishment, the black vomit, with all its train of attending evils, suddenly made its appearance, and a fatal termination ensued, when it was least expected. Copious feculent discharges by stool—relief from pain and restlessness—appearance of natural perspiration—and a mitigation of all the febrile symptoms—are circumstances which preceded a favourable termination. Constant irritability of the stomach—costiveness—or an absence of bilious matter in the stools—dry skin—or a glutinous perspiration—deep seated pain and oppression at the præcordia—laborious respiration—hunger—black vomit, &c. were the usual symptoms of a fatal result.

#### TREATMENT.

It will require no considerable extent of reasoning to convince the candid and unprejudiced medical observer, that notwithstanding the variety and irregularity of the attacks, and often their insidious and inexplicable nature; yet being dependent upon the same cause, and constituting varieties of the same disease, differing only in the *degree* of morbid action; that very similar indications of cure must necessarily exist in all cases. In the treatment of all general epidemics, the great object principally consists in discriminating between two modes, "*stimulation and depletion.*" And it is plain, that as no two opposite kinds of disease can become epidemic at the same time, so it is equally evident, that no two opposite systems of practice

can ever be requisite or proper. In all cases of this nature, then, it is necessary to adopt one common plan of treatment, to be varied in *extent only*, with the peculiar nature of the attack, and constitution of the patient. If the epidemic is one of increased excitement, of an inflammatory or congestive nature, requiring depletion, then all the different cases call for this class of remedies ; and *vice versa*.

So far as my observations extend, all febrile diseases in this climate, of every season, are either of an inflammatory or congestive character, and require active depletion in the commencement. As the hot season advances, these become progressively more and more violent, and it is an almost invariable rule, both among physicians and planters, to employ blood-letting very freely in the fevers of the spring and summer months. But in autumn, when they become more dangerous and fatal, and not unfrequently assume the congestive form, the pathology of which is but imperfectly understood, it is too frequently the case that depletory measures are either wholly abandoned, or considered as of secondary and doubtful importance. And when blood-letting is resorted to, it is with such diffidence, and employed so sparingly, as to be of little use, and often injurious.

The plan of treatment which I have adopted, in two previous epidemics of a malignant fever, in this climate, as well as of that which is the subject of this communication, was originally suggested to me by the writings of the immortal RUSH, whose account of the Yellow Fever of 1793, in Philadelphia, forms the best commentary upon the disease, as it appears in this country, extant. The principal difference between them consists in the greater proportion of congestive cases in this country, and the greater violence of the disease generally. As in Philadelphia and elsewhere, the most successful treatment of the disease here was active depletion ; and this was effected by the use of both blood-letting and purgatives. I have never met with a case of the disease that did not assume either a highly inflammatory, or a highly congestive character, and conse-

quently required a free use of the lancet. And I have rarely ever seen a case where this remedy had been used to too great an extent: and yet Dr. Johnson's remark upon this subject, will apply in this country with great propriety, that "*those bugbears, debility and putrescency, still paralyze the arms of medical men in hot climates, notwithstanding the clearest evidence in favour of venesection.*"

In all cases of a distinct inflammatory character, blood was drawn in large quantity, and rapidly, with good effect; and the only rule by which the extent of this practice was regulated, was a mitigation of every inflammatory symptom. But in the congestive variety of the disease, although the loss of a larger quantity of blood was required, yet it was necessary to be taken by small bleedings, frequently repeated. In these cases, both vital and animal powers are greatly depressed from excess of stimulus, which it is necessary to remove gradually, but thoroughly. Eight or ten pounds of blood have sometimes been drawn during the first twenty-four or thirty-six hours, by as many different bleedings, and a favourable reaction was generally the consequence of such practice, when properly conducted.

It is a common opinion, among those who adopt the plan of active depletion in yellow fever, that blood-letting cannot be employed successfully after the first or second day of the disease: and although there can be no doubt but this remedy is most serviceable in the very commencement, yet if the first stage has passed by without its application, there are many cases in which small bleedings, frequently repeated, may be beneficial, even on the fourth or fifth day of the attack. The propriety of this practice is pointed out to us by the operations of nature in such cases, in the almost uniform appearance of hemorrhage from the nose, mouth, &c. in the last stages of the disease. This seems to be an effort of nature, to relieve the blood vessels from the great plethora and turgescence which evidently exist at this time, and is best anticipated by frequent small bleedings from the arm. In the late epidemic, blood-letting was repeated as long as any indication existed for its



continuance, either in the pulse, or general symptoms ; and frequently until the eyes lost their redness and turgescence ; the skin became moist and soft—the bowels freely evacuated—nausea, and oppression at the præcordia, subsided—and the pains in every part of the body gave place to a general soreness. In accomplishing these objects, no regard was paid to the quantity drawn.

The best effects were produced by bleeding in the height of the paroxysm, and opening a vein in the arm generally answered all the purposes for which the remedy was intended. But in violent inflammatory cases, when there was much determination to the head, I have often found bleeding from the temporal artery to be of great service. It was generally necessary, in this disease, to perform the operation with the patient in a recumbent posture, for such was the propensity to syncope, in many instances, particularly of the congestive variety, that without taking this precaution very little blood could be drawn.

It is the congestive variety of yellow fever, so common in this climate, that has been the cause of much discrepancy of opinion among medical men, both as to its pathology and treatment. For, notwithstanding the writings of the learned Rush, Armstrong, and others upon this subject, the correctness of whose theories has been amply tested and confirmed by the experience and observations of many other distinguished physicians ; it is far from being universally acknowledged, that bleeding is useful in cases of an *apparently weak*, as well as a full, strong pulse : and such is the influence of foreign theories, that so long as European authors and practitioners continue to acknowledge the ancient doctrines of *debility* and *putrescency*, together with the necessity of bleeding to the extent of twelve or eighteen ounces in *inflammatory diseases*, characterized always by a *full, strong pulse*, it is very much to be feared, that the medical profession in this country will find great difficulty in advancing to a correct knowledge of the pathology and proper treatment of these malignant epidemics. In the first stage of violent congestive attacks of yellow fever, it is

even now not uncommon to see an attempt made to restore the patient to health and strength, by a free exhibition of diffusible stimuli! This reminds one of the beautiful simile of Dr. Rush, illustrative of these cases, where a man is represented as "struggling beneath a load of two hundred weight, who is able to lift but one hundred and seventy-five." Instead of gradually removing his burdens in order to relieve him, "the stimulus of the whip and strong drink" is plentifully supplied, until his strength is entirely exhausted, and he sinks never to rise again!

The disease which prevails in some parts of this country under the vulgar appellation of "*cold plague*," attended with cold sweats and oppressed pulse, I believe to be nothing more than a violent congestive form of bilious fever, and requires the same general treatment.

The next remedy to be considered, and which is of equal importance with the former in the treatment of the disease, is the free exhibition of drastic purgatives. The peculiar effects of this class of remedies form an additional argument in favour of copious blood-letting; for it is an invariable remark, that they operate with a facility just in proportion to the extent venesection is carried. While the most enormous doses of drastic purgatives were administered in the first stage of the disease with little or no effect, ordinary doses of the same medicines were observed to operate copiously after one or two bleedings. To procure a favourable effect with these two remedies, they seem, indeed, to be necessary to each other, for while blood-letting checks the violence of the paroxysm, and relaxes the rigid fibres of the whole system, purgatives are favoured in their operation, and subdue the disease, by a removal of those accumulations of morbid matter in the intestinal canal which are powerful exciting causes of fever.

In the administration of cathartics, the principal objects to be attained are, the thorough evacuation of the intestinal canal as soon as possible—to produce an increase of the secretion and discharge of bile—and to keep up a regular succession of evacuations during the progress of the dis-

ease. Nothing is of greater importance in the treatment of this disease, than to acquire and maintain a complete control over the operations of the intestinal canal, and when this can be thoroughly accomplished, there is but little doubt of a favourable result.

There is scarcely an article in the *materia medica*, possessing the qualities of a purgative, that has not been employed in yellow fever with reputed success, either by itself, or in combination with some other: but I have always found the best results to be produced by making *calomel* the basis of the purgative treatment. From twenty-five to forty grains were generally administered in the commencement of the attack, which commonly produced the effect of quieting and composing the stomach for the reception of some cathartic more immediately active. This was followed by large draughts of senna tea, or senna and Epsom salts, for the purpose of opening the bowels immediately, and making a powerful impression upon the system. This alternation of large doses of *calomel* and senna and salts was continued, as long as feculent, bilious discharges were produced. Very commonly, after some of the first operations of these remedies, the stools would become watery, limpid, and very frequent. In such cases, large doses of *calomel*, scammony, and aloes, in equal parts, were found admirably calculated for procuring a return of feculent evacuations, and restoring the declining strength of the patient. A combination of the tinctures of aloes and myrrh, in proportion of one ounce of the former to half an ounce of the latter, was frequently used with a good effect by an eminent physician of this city, for the above purpose.

*Calomel*, besides operating more kindly on the stomach and bowels than any other cathartics, seemed to be particularly beneficial in this disease, in consequence of its peculiar effects in correcting morbid secretions, emulging the biliary ducts, and discharging accumulations of morbid bilious matter from the intestines. It was also found to possess the valuable quality of obviating most of the troublesome, and sometimes dangerous *sequelæ* of the disease,



such as visceral obstructions and congestions, dyspepsia, jaundice, sallow complexion, &c.

A mercurial salivation is principally relied upon by many physicians in this climate, for the cure of this and other febrile diseases, and undoubtedly it is sometimes serviceable after sufficient depletion, particularly in the congestive variety of disease: but I have rarely found it necessary to resort to the exhibition of calomel and opium for this purpose, when mercurial cathartics had been freely employed; as these generally produce a sufficient degree of mercurial action to remove any local obstructions or congestions that might exist. It is always extremely difficult during the stage of increased excitement, in these cases, to create a mercurial action; and when a salivation is produced by dint of great perseverance, an immunity is not always secured from death, and even recovery is frequently attended by circumstances that render life burdensome. It is no small objection to the mercurial treatment of yellow fever, that opium becomes a necessary auxiliary, which always exerts a baneful influence in this disease, independent of its constipating effects.

Mercury loses much of its credit and usefulness by being injudiciously employed in bilious and malignant fevers: and although I should hardly know what course to pursue in the treatment of these diseases without the aid of this medicine, still I cannot but express an opinion, that it is productive of great mischief, when given as a salivant in the inflammatory stages of fever. It is far from my intention to convey an idea, that mercury given with this view is not a useful and important remedy in acute diseases, both general and local: but that it should never be employed for the purpose of exciting a mercurial action, except in the declining stage of such complaints, and when the inflammatory action has been entirely or nearly subdued by other means.

Emetics, although they might, perhaps, prove serviceable in the mildest form of yellow fever, if given upon the very accession of the cold fit, yet as a common remedy in

the disease, their operation is certainly too precarious to admit of indiscriminate employment. They almost invariably increase the irritability of the stomach, and not unfrequently render this distressing and dangerous symptom wholly irremediable. I have witnessed many instances in which a constant vomiting was kept up by the operation of a single emetic, until the black vomit and death was the consequence: and this, too, in cases that were not previously considered dangerous.

Irritability of the stomach I have found most readily relieved, during the first stage of the disease, by copious venesection, and subsequently, by blisters to the epigastrium, and the exhibition of large and frequently repeated doses of carbonate of ammonia. This last has often proved in my hands, a very valuable remedy in the declining stages of both varieties of this disease.

Nitre, oil of turpentine, linseed tea, watermelon seed tea, and mucilage of gum arabic, have all been known to produce a good effect in cases of suppression of urine. Sometimes a warm cataplasm to the region of the bladder has relieved this symptom, when it had become troublesome.

Cold bathing was useful in relieving pain, &c. in the first stage of the complaint; the best form of which, in my opinion, is ablution with cold vinegar. The operation of this remedy in mitigating febrile excitement, and relieving pain in the head, back and limbs, was truly surprising, invariably giving comparative ease, and producing a propensity to sleep. This effect, however, was only temporary, all these symptoms returning again, in a short time, with their usual violence. As it seems only to mitigate present distress, without producing permanent benefit, no reliance ought to be placed upon it as a remedy. In my opinion, it should only be used for purposes of temporary relief, and with a view of gaining time for the employment of more active and effectual means of cure. Its application should never be allowed to interfere with blood-letting and purgatives.

A removal from the city to the country produced a sur-

prisingly beneficial effect, particularly upon convalescents. Although deaths from relapse were very common in the city, yet when the convalescents were removed into the pure air of the country, they almost invariably recovered without the farther use of remedies, and in many instances with astonishing rapidity. Tonics were necessary during convalescence. A decoction of bark and snakeroot, or some of the preparations of iron with colomba, were found to answer well in such cases. Porter was generally the best stimulus.

#### INFLUENCE OF THE WEATHER, &c.

Sudden changes of weather, from heat to cold, exerted a powerful influence upon this epidemic. On the 13th and 14th of September, we had a violent storm of wind and rain from the north-east. On the 15th the weather became fair, thermometer at sixty-six degrees. During these three days a great many died who had been previously attacked. But subsequently, the disease became more mild and tractable, and the attacks less frequent. In the decline of the epidemic, it gradually assumed a milder and less fatal character, and although it cannot be said to have entirely subsided before the first of November, yet during all the month of October it became much less malignant than previously, and not unfrequently assumed the type of an intermittent. During the night of the 31st of October, a very great change took place in the weather. The wind changed suddenly from the south to north-west, and the thermometer fell from seventy-eight to twenty-eight degrees, in about sixteen hours. On the 1st of November it was considered safe to return to the city, and the people flocked in, in great numbers. No case of the disease occurred afterwards.



ART. II. *An Account of Cases of Endemic Fever, that occurred in Cahawba, Alabama, in the Summer and Autumn of 1823, with topographical observations, &c.* By J. WIGGINS HEUSTIS, M. D.\*

THE State of Alabama extends from north latitude thirty degrees twelve minutes, to north latitude thirty-five degrees, being three hundred and thirty-four miles in length, with a mean width of one hundred and fifty-five miles ; comprising fifty-one thousand seven hundred and seventy square miles, and thirty-three millions, one hundred and thirty-two thousand, eight hundred acres.

The rivers of this State are principally the tributary waters of the Mobile, viz. the Tombigby, the Tuscaloosa, the Cahawba, the Alabama, the Coosa, and the Talapoosa ; besides which, its south-western section is watered by the Canecah, whilst the Chatahooche forms a portion of its western boundary. On the north, the Tennessee River pursues a serpentine direction, entering the State of Alabama near the north-eastern, and making its exit at the north-western angle. The Muscle Shoals of the Tennessee are in the State of Alabama, and are, in many places, three miles wide ; the bed of the river is here hard blue limestone, extremely rough and uneven. The river at the Shoals is fordable in the summer, though hazardous, on account of the numerous holes and fissures in the rocks, and their ragged and broken surfaces.

The quality of the soil of this State is various, though by far the greater portion is poor and barren. Along the margins of the rivers and creeks, the soil, in many places, is extremely rich and deep, and from a quarter of a mile to a mile in width. The first low grounds on the river are called the *river swamp* ; the next is higher, and more dry, and is called *second bottom*, or *hammock land*—though fertile, the soil is not so deep, rich, and black, as that of the swamp ;

\* Author of Physical Observations and Medical Tracts and Researches on the Topography and Diseases of Louisiana.

at a still greater distance from the river is the upland, which, in most places, consists of barren soil, covered with pines; and where less steril, a few scattering oaks and hickories. In the northern counties, there is a considerable portion of good upland, on which are raised plentiful crops of corn and cotton. In the middle section of the State, in the counties of Wilcox, Dallas, Green, Perry, and Tuscaloosa, there are also considerable bodies of excellent upland.

The face of the country is much diversified. The southern portion, along the Gulf of Mexico, is low, level, and sandy for ten or twelve miles from the coast, where the hills commence; thence advancing northwardly, the country becomes more broken and hilly. The southern extremity of the Alleghany or Appalachian mountains extends into the northern portion of this State, rendering it broken and mountainous. Between the rivers, after leaving the low grounds, the country is hilly and broken, and generally consists of a barren soil, covered with lofty pines and a coarse grass, affording range and shelter to vast quantities of deer, which are very plenty in every part of the country.

The knobs and declivities of the hills, in the middle and northern parts of the State, abound with red sandstone, more or less strongly impregnated with iron. Iron ore, of an excellent quality, may be found in abundance in the hills. Mines of lead ore have also been discovered. There are also great quantities of stone coal in the country; though, from the quantity of wood, this article is as yet neglected.

The State of Alabama is what is called a limestone country, and that in a more considerable degree than the other western and southern States. The substratum of limestone has this peculiarity, that, unlike that of Tennessee and Kentucky, it is in general of a soft consistence, and is here called rotten limestone. In many places this rises near to the surface of the earth, and in others is covered with a deep alluvial deposit of sand, loam, gravel, clay, &c. In general this limestone is mixed with a portion of clay, and is of so soft and friable a consistence, as to be cut with a knife, and crumble to pieces when exposed to the air. In

many places this stratum is covered with only a few inches of earthy matter, the fragments of the decayed limestone, and the accumulation of vegetable mould: in others, the limestone rises to the surface, and is destitute of vegetation, appearing white as the sea beach, and partially covered with oyster shells.

It is owing to the proximity of the limestone to the surface, that the existence of those extensive prairies, or natural meadows, in this section of the country, are to be ascribed. Wherever these prairies exist, the lime is of a soft and claylike consistence; where it approaches near the surface, the soil appears whitish, and is clothed with a short growth of grass and herbage; where it lies deeper, the grass is denser and taller; and upon the borders, between the woodland and the prairies, the growth of weeds and grass is very luxuriant; but upon the prairies themselves, there is not sufficient depth of earth for the growth of trees.

In many places these prairies are settled and cultivated, and when the season is favourable, produce excellent crops of corn and cotton. The farmer, however, can make no certain calculation upon them; for if the season is wet and rainy, the soil scarcely admits of cultivation, being as soft and miry as a bed of mortar; owing to the nature of the soil, which is stiff and loamy, and to the proximity of the limestone to the surface preventing the ready filtration and draining of the water. The consequence is, that in many instances, the seed rots in the ground; or, should much rain succeed to its vegetation, the tender plant is drowned and killed by the excessive moisture.

A farther inconvenience is sustained from the quality of the water for domestic use, which, for the most part, is warm, and exceedingly disagreeable to the taste, being strongly impregnated with the rotten limestone. In point of health, however, the prairies are scarcely surpassed by any portion of the State. To this there are a few exceptions in and adjacent to what are called the woodland prairies, where the soil being a deep, black, vegetable mould,



gives rise, during the heat of summer, to noxious exhalations, which occasion cases of the endemic fever, of the bilious, remitting, and intermitting types.

About Christmas, the grass and herbage in the prairies wither and become very dry; and as fire is frequently communicated to them by settlers and hunters, they undergo a very rapid and extensive combustion, more especially when aided by strong winds. Deer, and other wild beasts, are, in this manner, sometimes surrounded by the flames and destroyed. It is from the combustion of these prairies, and of the leaves and herbage of the woods, that the atmosphere, in the fall and winter, is often rendered so dark and smoky; in so much as sometimes to occasion soreness of the eyes and coryza.

The thickness or depth of the limestone in these prairies has not yet been satisfactorily ascertained. Near their borders a thin stratum of a foot or two in thickness has been penetrated, and good water found in the sand and gravel beneath. But remote from the sandy upland, many unsuccessful efforts have been made to obtain water, by penetrating the limestone, in which holes have been sunk to the depth of one hundred feet, without finding water, or the discovery of any alteration in the stratum of limestone. In the woodland prairies, adjacent to what are called the *bald prairies*, (so termed from being destitute of trees,) the stratum of lime lies a greater depth beneath the surface, and in addition to the vegetable mould is covered with a stratum of red clay, of unequal thickness in different places. Where there are no prairies, the stratum of lime lies at a still greater depth, say from fifteen to twenty feet. Here the strata are as follows: clay—sand—gravel—and limestone. Beneath the limestone there is another stratum of coarse gravel, and frequently coal. These several strata are of very different and unequal thicknesses. In some places the clay or argillaceous earth extends to the depth of thirty or forty feet, in others not more than three or four.

In riding through this country, the attention is often arrested by the deep circular holes in the earth, of several

yards, and even rods, in diameter ; presenting the appearance of volcanic craters, but evidently formed by the falling of the incumbent earth into the fissures and cavities of the limestone. Whilst in East Florida, about four years since, in company with several other persons, prompted by curiosity, I descended into one of those craters, for the purpose of exploring a cave, the entrance of which was by a narrow opening at the bottom of this sink. This circular sink or crater was about thirty yards in diameter, and about sixty feet deep. Over the mouth of the cave, a little cascade descended from the plain, and dashed upon the broken rocks beneath. We lighted our pine torches, and entered the cave. The passage, in many places, was very much confined, and from the difficulty and inconvenience in proceeding, as well as from alarm and apprehension, my companions in the adventure soon became disheartened, and retraced their steps. I, however, in company with a single person, was determined to proceed ; and to facilitate our exit, we here and there left a burning torch of pine to direct our steps. At times, we found ourselves in spacious but irregular apartments ; again the passage was so much straitened, that we were obliged to crawl upon our hands and feet. Having proceeded in this way about two hundred yards, and coming to a very narrow place in the cave, I resolved to return. Much fatigued, and out of breath, from climbing over the ragged rocks, and from crawling through the narrow passages, I seated myself upon a projecting step, and whilst employed in cutting the initials of my name upon the soft limestone of the cavern, the light of my companion's torch went out ; he advanced to kindle it, but in vain. Apprehensive of the existence of carbonic acid gas, I hastened to return, with my torch dimly burning. But in so doing, we were nearly led into a dangerous error, by mistaking the way, and pursuing for a short distance a collateral branch of the cave. We soon, however, discovered our mistake, and by occasionally observing our tracks upon the wet and muddy bottom, were enabled to find the avenue by which we had entered. We found,

upon our return, that the torches which we had scattered by the way, were entirely extinguished, and I was at length happy in making my exit from this subterranean dungeon. Our long stay in the cave had produced a degree of uneasiness among our companions, who awaited us without, and who, from apprehension, had despatched two of their company in search of us, whom we found a few rods from the entrance of the cave.

In many places, these caves and caverns, which abound in limestone countries, afford subterranean passages to streams and creeks of considerable size, and which, finally meeting with obstructions, rise to the surface in the form of springs, many of which afford sufficient water for mill seats. A very large spring of this description is in the vicinity of Huntsville, another at Tuscumbia, which, immediately below their exit, afford sufficient water for barge navigation; besides which there are numerous others in various parts of the State. The water of these springs is remarkably clear and cool, and the smallest object may be distinctly seen at the bottom, a depth frequently of twenty or thirty feet.\*

Independently of the prairies and river lands, there is comparatively but little good land in the state. The river lands have of late years depreciated much in value, from the annual inundations to which, in many places, they are subject. From the broken and hilly nature of the middle and northern parts of the State, affording a ready efflux to the water, the rivers are subject to a very rapid rise. A rain of twenty-four hours has often caused the Alabama to

\* One of the most beautiful springs of this kind is in Lancaster county, near Marietta, in this State. In excavating a cellar for a brick house at the foot of a limestone hill, an opening was made into a large stream, which immediately flowed over the surface. At this time there is nothing more interesting than to see a large and flush stream gushing out of the cellar door of an inhabited dwelling, standing at the foot of a considerable limestone hill, without any indication of a rivulet in the vicinity above. At the distance of the eighth of a mile from the house, this spring is joined by another, and the two work a large merchant mill, within a quarter of a mile of their apparent sources.



rise from fifteen to five and twenty feet. After arriving at its highest elevation, which, at Cahawba, generally takes place about a week after the fall of the rain, it remains nearly stationary for a day or two, and then begins to fall slowly, gradually increasing in the rapidity of its descent to its usual level. In general, the river does not rise above its banks till the month of February, though from January to May the country is liable to inundation. The greatest floods happen in the spring. The heavy rains commence in the month of March, and sometimes continue nearly a week almost incessantly. April is also a very rainy month. The highest flood that has been known here for many years, took place from the 15th to the 22d of April, 1822, when a considerable part of the town of Cahawba was laid under water, which, in low places, was from four to eight feet deep.

The summer, in this country, is long, and the heat intense. From the first of May to the last of September the weather is uniformly hot. The nights, however, from the copiousness of the dews, are generally cool and comfortable. During the summer, the thermometer, in the heat of the day, ranges from eighty to eighty-eight degrees, sometimes rising as high as ninety-six degrees; and in the mornings, and at nine P. M. from seventy-two to eighty-five degrees.

Throughout the summer, showers are frequent and profuse. The rain, accompanied with thunder, vivid lightning, and heavy gusts of wind.

During the winter, the mercury seldom falls below thirty-two degrees of Fahrenheit, in the coolest mornings, nor does it often rise higher than seventy degrees in the warmest part of the day. In the month of February, 1823, the mercury was as low as six degrees above zero, which was the coldest weather that has ever been experienced since the settlement of the country by the white inhabitants. Such, indeed, was the severity of the cold that all the orange and fig trees in the State, some of which were forty years old, were killed by the frost.

During the winter season, the weather is very variable.

frequently changing from cold to warm, and *vice versa*. A southwardly wind continuing for a day or two, is almost always succeeded by rain; it then clears off with a sharp wind from the north-west. These sudden changes of the wind from south to north, have frequently caused a variation in the thermometer of forty degrees.

Notwithstanding this variable state of the weather during the winter months, the inhabitants are but little subject to pulmonary affections, Chronic catarrhs, or coughs from neglected or mismanaged pulmonic inflammations, are sometimes observed, but idiopathic cases of phthisis pulmonalis are very rare.

The spring of 1823 was cold and backward, and nearly a month later than the preceding. March and April were extremely wet and rainy, and the river, though it did not rise as high by five or six feet as in 1822, yet continued up much longer, in consequence of the excessive quantity of rain. In April, colds and sore throats were common, and in some instances quite severe.

Early in May, the hot weather of summer began with considerable intensity. The mercury in Fahrenheit's scale frequently rising to eighty and eighty-six degrees in the heat of the day. Several slight cases of fever and bilious attacks made their appearance.

May 13th, I was sent for to a gentleman, aged twenty-eight. Since the preceding season, he had been occasionally subject to returns of chills and fever, but the disease now assumed a more serious aspect. I found him with a high fever—skin hot and dry—pains in the head—somewhat delirious—pulse not much increased in frequency, but strong, with a considerable degree of tension. I took about a pint of blood from his arm, which procured considerable relief, softened his pulse, and rendered it less frequent. I then prescribed an emetic, which also operated as a cathartic. This combined operation completely subdued the fever, but at this period he was affected with a cramp in the feet, hands, and legs—an effect which I have several times observed to take place during the atony and apyrexia which

surpervene upon the operation of tartar emetic in weak and irritable habits. This affection was removed by the exhibition of paregoric, the use of friction to the extremities, and the warm pediluvium. Under the use of the bark, he remained free from the fever till the 15th, when it again returned with considerable violence. I found him with a smart fever; but his pulse was soft—his skin a little moist, though his forehead was dry—his countenance expressed much anxiety—he complained of violent pain in the head—distress and oppression of the stomach—and was affected with a considerable degree of delirium. I directed a linen cloth, wetted with cold water, to be applied to the head, which afforded some relief. As a sudorific, aperient, and febrifuge, I prescribed six grains of tartar, dissolved in half a pint of warm water, and directed a table-spoonful to be taken every half hour. I also prescribed an enema. Under this treatment he soon broke out into a free and general perspiration, upon which he became much relieved. Upon visiting him the next morning, I found him sitting bolstered up in the bed, and free from fever. I prescribed the free use of the bark, in the quantity of an ounce a day in port wine. In a day or two he was able to leave his house and walk out.

A number of cases very similar in character occurred, which, by modification of the same treatment, were soon relieved. As they offer nothing peculiar, it is unnecessary to give them in detail.

On the 15th of June, I was sent for to visit the family of Mr. G. about ten miles from Cahawba, in the edge of the prairies. The situation of this family I found truly deplorable. Mrs. G. was stupid and senseless, almost without a pulse. In the same room with Mrs. G. were two children, a son and a daughter, from twelve to fourteen years of age, labouring under a fever of doubtful issue. In the next room was an elder daughter, also confined with the fever. The latter had been taken, about a week before I saw her, with chills and fever, though she had not since been all the while confined, but for the most part was able to keep



about. The night before I visited the family, she had slept none. At the time I saw her she had a slight fever—pulse increased in frequency, but not tense. As she had taken little or no medicine, I concluded to give her a dose of calomel and sulphate of magnesia, which, in a few minutes, seemed to occasion great uneasiness and oppression, with some degree of prostration. Not having any white vitriol, I gave her a dose of ipecacuanha, with the view of causing her to reject the salts, and relieving the load at the stomach: but the distress, oppression, difficulty of breathing, coldness, and prostration, continued to increase: vomiting could not be excited, or the sinking prevented or relieved, by the use of spirits, laudanum, peppermint, camphor, and warm applications; and she died in about three hours after my arrival, in great misery, oppression, and anxiety, complaining that she could not get her breath.

This young woman was very fleshy. She had fainted in the morning when up, and was under the necessity of being carried to bed. Of this I was ignorant, and prescribed merely from external symptoms, without making sufficient inquiry as to her strength, and the nature of the preceding symptoms. I have generally remarked that in fat people labouring under fever the circulation appears to be more languid and obstructed; and that therefore the greater caution is required in their treatment, lest by the incautious use of depleting remedies an alarming and fatal prostration be produced. In lean people, the blood vessels being unconfined, have a freedom of action, and the fever develops itself; but in fat persons the circulation is straitened and oppressed, and an active emetic or cathartic is liable to produce a sudden and fatal prostration. In such it would perhaps be adviseable to avoid the use of calomel\*

\* The sulphate of magnesia, in this case, was most probably the cause of the immediate prostration. Neutral salts, especially when given directly after solution, will, even in healthy persons, produce symptoms of chilliness, owing to their great capacity for heat. Large doses of calomel are frequently prescribed, without any immediately perceptible effect, in the lowest states of fever, in all parts of this country, whether judiciously or injudiciously.

altogether, which seems to debilitate more than any other medicine. Miss G. was perfectly conscious of her situation. She complained that she could not take her breath—she turned purple in the face—purple spots appeared on her arms—in a paroxysm of distress she sprung from the bed, and was supported and borne to the passage, and laid down, exclaiming, “I am dying.”

Her mother, Mrs. G. was in a state of stupor and complete annihilation of mind. She had no consciousness of any thing about her, though she had an unusual restlessness, which kept her in motion, and moaning. She sickened on Wednesday, the 11th, and I saw her on Sunday, the 15th. She had taken an emetic, which had operated well, and brought away a considerable quantity of bile, by vomiting, and operated once by stool. At the time I saw her, her pulse was small, tremulous, and scarcely perceptible—extremities moderately warm—skin moist and perspirable. She would generally spit out every thing that was put into her mouth, as soon as she became conscious of its presence. She died after an illness of six days. In the two younger children of Mr. G. the symptoms were less alarming. They were, however, affected with a considerable degree of stupor—pulse frequent and small—tongue moist, and but little furred—skins moist—heat moderate. They were blistered upon the back of the neck, and took the effervescing draught, cremor tartar, and bark, whenever the remissions of the fever would permit. They recovered, though their convalescence was slow and lingering.

W. A. aged about seven years, was attacked, July 9th, with high fever—skin hot—drowsiness. 10th, High fever—pulse very frequent—skin hot and dry—tongue moist and covered with a white fur. He took tartarised antimony, which did not operate very well, either as an emetic or cathartic. I was sent for again about two o'clock of the same day. I found that his fever had considerably increased—skin caustic and burning to the touch—drowsiness—face flushed—palpitation of the heart—pulse very frequent and small. I prescribed the cold bath, which was repeated three

or four times without procuring any thing more than a temporary relief, the heat rising in a few minutes to as great a height as before—discharges procured by medicine consisting mostly of a yellowish slime. Finding that the cold bath procured but little relief, I opened a vein and took away about a pint of blood ; I then repeated the cold bath, and upon the heat again rising, I applied a towel wetted with cold vinegar and water, to his breast and stomach ; in a few minutes the burning heat was diminished—the skin became more relaxed—a degree of moisture appeared upon the surface—and the stupor and drowsiness diminished. Four blisters were directed to be applied to the extremities, and one to the pit of the stomach—directed the continuance of the febrifuge remedies, cremor tartar, spirits of nitre, effervescing draught of limejuice, and carbonate of potass. 11th, Fever much abated—pulse frequent but soft—intellect clear. Gave calomel and jalap, two doses—two grains of the former, and fifteen of the latter, each ; which procured only two or three discharges, of a light, offensive, yellow coloured matter. Cured by the use of cold bath, bark, &c.

July 13th, I was called to see Mr. E. L. in consultation with Dr. Lesly and Dr. Meux. In the early part of the month Mr. L. had subjected himself to considerable fatigue and exposure, by riding. When I saw him he was in a state of great prostration—hands and arms cold, and covered with a greasy moisture—face purple—feet and legs possessing but little warmth—considerable restlessness and sighing—tongue white and moist—breast and bowels moderately warm, and covered with a greasy dampness—pulse one hundred and forty in a minute, small and weak. He had laboured under fever for three or four days before I saw him. In the early stage of his illness he had taken tartarised antimony, which, although it had been exhibited in very small quantity, occasioned an obstinate flux, which could not be checked. The stools were yellowish and watery. It was agreed to try the effects of the warm bath, though I was doubtful myself whether the patient was not too much de-



bilitated to authorise its employment. In the bath his pulse became still more feeble and frequent. He had been previously blistered on the region of the stomach, and on the extremities. I advised the use of nitric acid and hot brandy toddy. I saw him again after supper, when his pulse had sunk, and become extremely frequent and feeble, though he would answer when spoken to, and said that he felt very well—was affected with considerable restlessness and moaning—hands, arms, and upper parts of the body, cold and damp. He had not taken any stimulus since I saw him last. I recommended a couple of table-spoonsful of hot brandy toddy, tolerably strong. In a few minutes the pulse rose, and the restlessness diminished; consciousness and intellect were, in some degree, restored.

14th.—Appears much better this morning—intellect much clearer—converses rationally, and appears tolerably cheerful—hands and arms still cool, but no longer covered with the clammy exudation—pulse stronger, fuller, and less frequent. He took occasionally through the night warm brandy toddy; and after that began to be offensive to the stomach, port wine. The warm applications were continued to the extremities.

*Evening.*—Worse—deep coma—incapable of being roused—eyes closed—insensibility—skin moist—hands and arms cold and clammy—stools yellow—some restlessness and tossing—head moderately warm—occasional hiccough; has taken the nitric acid, which stops the hiccough.

15th.—No better—deep coma—insensibility. Died about three P. M.

During this fatal illness Mr. L. complained of but little pain or uneasiness; and on the morning of his prostration, the day I saw him, he appeared quite comfortable, and expressed a desire to sleep. Indulging his propensity, he slept an hour, and awoke cold, and without a pulse. He judged of the danger of his situation only from the anxious looks of his family and friends, and the busy attention of several physicians, who had been called in consultation. Speaking of this circumstance on the day preceding his death, he ob-

served that it was a very strange kind of a disease, that a person could not take a nap in it, without awaking and finding himself dying; but that he felt so much better at that time that he thought he should soon recover. His hopes were disappointed.

July 14th, I was called to visit W. E. Previously to my seeing him, he had been subject to the remitting, or malignant intermittent, for two or three weeks; from which he had in some degree recovered and got about, when he was taken with a relapse on Thursday, the 10th. Dr. Casey, my partner, saw him on Saturday, the 12th, when he bled him, and gave him a dose of castor oil, which he rejected. He was taken again with another paroxysm on Sunday night, after an imperfect remission. Fever very high—skin hot, dry, and parched—tongue dry, smooth in the middle and shining, of a pale colour, with a slight fur and moisture upon its edges—considerable distress and moaning. The fever came on with a slight chill. I took from him about thirty ounces of blood, which reduced the pulse, and rendered it softer—the skin cooler—tongue moister. I wetted a towel with cold water, and applied it to his breast—bathed his extremities with cold vinegar—gave him cremor tartar, and the effervescing draught. His skin, in less than an hour, from having been hard and dry as a board, became a little moist. After the bleeding, there were symptoms of prostration—his pulse fell—and he became quite restless and deranged. I directed a dose of salts to be given to him early on the ensuing morning.

15th.—Free from fever—pulse soft—intellect clear—want of appetite—bad taste. Took the salts, which had operated two or three times—has taken the bark with the snakeroot, though it nauseates. He recovered.

Mr. J. V. S. aged sixty, was taken, Saturday, July 12th, with fever, not preceded by any chill—pulse soft—great sickness. Bled, and gave him a dose of white vitriol and tartarised antimony; from which he threw up and discharged by stool a considerable quantity of bile. The fever went off towards night.

Sunday, the 13th.—Free from fever, but would not take any bark.

Monday, the 14th.—Fever returned, with vomiting. Found him drinking warm water, and throwing it up again—pulse full and frequent. I took away about a pint of blood—gave him the effervescing draught, with a few drops of paregoric to excite perspiration.

*Evening.*—Better—the fever has nearly left him—has taken the effervescing mixture of soda and limejuice.

15th.—Free from fever—tongue still covered with a white fur. Has taken the bark, and was directed to continue it every hour, in as large quantity as the stomach would bear. In a few days he recovered.

A child, aged six years, had experienced two or three attacks of fever, but took nothing for it. She was then seized suddenly with dangerous symptoms, when the family sent for me; but not being at home, they got another physician to attend, who gave a dose of calomel, which never operated. When I saw her, which was in a few hours afterwards, she was expiring—her limbs were rigid with spasms—her face was convulsed—her eyes fixed—and yellow bile flowed out at the angles of her mouth—her skin was hot and dry. She died in a few hours.

Another female child, belonging to the same family, laboured under a high degree of the bilious fever—her pulse was very frequent and small—respiration short, quick, and laborious—skin hot and burning—face bloated—in short, she appeared to be almost on the point of expiring, so that her parents thought it useless to attempt any thing for her relief. I, however, directed injections to be given her, and the whole body to be wrapped in flannel wetted with warm vinegar; blisters were also applied to the extremities. In a few hours she was much relieved. She had a few exacerbations of fever, and was treated in the same way. When the remissions of the fever were pretty distinct injections of bark were given her. She recovered.

Mr. B. was taken, Wednesday, July the 16th, with a high fever. I took away about sixteen ounces of blood,



and gave him an emetic, which operated well, and left him free from fever. When I saw him, his pulse was full and tense—face flushed—headach—tongue slightly furred—had complained, for three or four days previously to the attack of the fever, of soreness in the limbs.

17th.—Free from fever—has taken the bark freely every hour. I now directed him to discontinue it, and to take cremor tartar and limejuice occasionally through the night.

Friday, 18th.—Tolerably clear of fever. Directed him to take the bark. Fever returned in the evening. Bled the patient freely, and gave him a dose of salts. The pulse, by the bleeding, was rendered smaller and less full, but not much softer—skin cooler, but no perspiration. The perspiration broke out for an hour or two before bedtime, then dried up—pulse still full and strong. The salts operated pretty copiously.

Saturday, the 19th.—Pulse full and strong—skin cool—tongue slightly covered with a white fur. He was directed to take the bark every hour. Recovered.

*General remarks.*—There is some difference in the fevers of this season from those of the last; being more disposed to remissions; though they often came on without any chill or cold stage. In some, the fever is very irregular, rising and falling several times in the course of the day. Tongue generally covered with a white fur, a sign of high arterial action, and indicating the free use of the lancet. Sweats very irregular, and not generally long continued—constipation less—stools not so black, and more inclined to yellow—the blood black, thick, and but little disposed to separate and form the buffy coat, and affording but a small quantity of bloody serum—tongue sometimes clean—or but slightly furred, even in severe cases; in others it is covered with a thick, white fur, especially where the pulse is tense, and in some where it is not, as in old Mr. S.

About the 16th of September the weather underwent a change, becoming cloudy and much cooler; wind northwardly and north-eastwardly; the thermometer falling to sixty-four and sixty-eight degrees in the morning, and not

rising higher than seventy-four or seventy-eight degrees in the heat of the day. The weather continued in this way for four or five days, when the thermometer again rose a few degrees, and the weather became quite warm for two or three days. The wind from the north and north-west brought cool and cloudy weather; the thermometer sinking to sixty-four and sixty-two degrees in the morning, and rising to seventy-two and seventy-six in the middle of the day. Towards the last of the month of September, the weather became clear, but cool, wind mostly from the north and north-east. This cool weather produced a sensible change in the character of the disease; from symptoms of high excitement, the patients that were attacked at this period were affected with those of a low, nervous or typhoid character; the pulse was, generally, rather weak, soft, and easily compressible, possessing nothing of that strong, wiry firmness, and resistance to the touch, which characterised the fever in the heat of summer. The tongue was generally clean and moist—the pain in the head and back was distressing—great sickness of the stomach, with frequent returns of vomiting—the heat of the surface was generally but little increased, and there was in several a considerable disposition to coldness of the extremities, and to cold shivering, or rigors, upon any sudden exposure to the air—the thirst for cold water great and unappeasable, and all liquids, when taken in any considerable quantity, speedily rejected.

S. M. one of the patients already mentioned, had entirely recovered from his former illness, but he was again taken with the fever, on Friday, September 26th. This was the only patient that I found to require bleeding at this late period of the season. His pulse was slow, but tolerably full and strong, though free from tension. He at first had been attacked with a severe ague, followed by a fever, which went off in a few hours, and he continued in tolerable health for two days afterwards. His fever again returned, Sunday the 28th, about ten o'clock, A. M. with chilliness—sickness, and ineffectual efforts to vomit—and

pains in the head and back. I at first gave him, as an emetic, ten grains of ipecacuanha and ten of white vitriol, and finding that this vomited only once, I repeated the dose, with the like success. I then exhibited four grains of tartar emetic, which vomited two or three times, and with the calomel and purgative pills, which I afterwards gave, procured several bilious evacuations. Finding, in the evening, that the pains continued unabated, with an increase of fever, I took away about twelve ounces of blood. He found relief from the operation—his fever went off towards morning—and the next day, Monday the 29th, he took snakeroot tea, and two or three tea-spoonsful of paregoric, with the view of preventing the return of fever. His sickness and fever returned, however, about sunset. I again gave him a dose of ipecacuanha and white vitriol, to cleanse the stomach. At night, he took four purgative pills, which, with the effervescing draught, which he took two or three times, operated till the next night, bringing away brown and dark green matter. From the obstinacy of the pain in the head, I applied a blistering plaster to the whole extent of the forehead, from which he experienced some relief. In the evening his fever rose, with an increase of pain in the head and back—pulse not increased in frequency, but full and tolerably strong, tongue slightly covered with a white fur. I took away about sixteen ounces of blood, which afforded considerable relief. Recovered.

E. E. aged ten years, was taken a day or two before I saw her, but not complaining, her disease was not noticed, till the fever was confirmed. I saw her, July the 19th, when she had considerable fever, though, as in many other instances this season, it has come on with little or no chill—pulse frequent—skin hot. I took away between eight and twelve ounces of blood, gave an emetic, and a dose of calomel and jalap, which not operating very well, was followed by a dose of salts. The fever still continuing, I repeated the bleeding in the evening, and prescribed the cold bath.

Sunday the 20th.—Fever still continues high. Took



away twelve ounces of blood—gave the effervescing mixture of soda and limejuice, with cremor tartar.

*Evening.*—Fever still high—skin remarkably hot—pulse frequent and tense. Took away about sixteen ounces more of blood—repeated the cold bath four or five times, with little effect. I then ordered her feet and legs to be put in a tub of hot water, and two buckets of cold pump water to be poured upon the body. This produced a considerable degree of coldness—and a smallness and feebleness of pulse, which still continued frequent. Gave ten grains of calomel, and applied blisters to the extremities. I should have observed, that through the day, during the intervals of using the cold bath, her body had been wrapped in wet linen cloths, which, on several occasions, I have found of great service; the fever, however, all this time, had continued unabated, and no perspiration appeared, notwithstanding the use of cremor tartar, in the quantity of a tea-spoonful every hour or two, and the effervescing mixture.

21st.—Fever much abated this morning. I prescribed the solution of tartarized antimony, made by dissolving six grains of the tartar in half a pint of water, of which she was directed to take a spoonful every hour. Fever rose in the afternoon, though not so high as formerly. Gave cremor tartar drink, and employed the affusion of tepid water. A flow of perspiration followed its use.

22d.—Fever much abated this morning. Gave the snake-root tea freely through the morning.

*Evening.*—The snakeroot tea produced a free perspiration—some increase of fever—discontinue the snakeroot, and give the spirits of nitre and cremor tartar every two hours.

23d.—Free from fever—gave the bark.

26th.—Fever returned last evening. Gave Epsom salts, and a solution of tartarised antimony every hour. She recovered.

Mrs. A. aged thirty-five, had been much fatigued by nursing and attending upon her son, who had been labouring under an attack of bilious fever; and being naturally of a feeble and delicate constitution, her health had sustained considerable injury. On the 16th of July, on the death of

Mr. Lane, who lived opposite, and where she had stepped over on a visit of friendship and condolence, she received a fright. Her little son, to prevent his going out, had been shut up in the house, and going to a window that was raised, effected his escape, which alarmed his mother, who sprung from her seat, and stepped hastily over the stile of the fence; when she reached the house, she had nearly fainted through fright and exertion. She was five or six months advanced in pregnancy. I saw her on the 18th of July. She had been bled two days before by another physician at her own request; and as she still had some fever, I took a small quantity of blood from the arm. She complained of difficulty of breathing, and oppression of the breast, which were relieved by the operation. I at the same time prescribed a blister to the chest, and a dose of ipecacuanha to unload the stomach. Her pulse was frequent, though it did not possess much strength or firmness. She had but little fever through the day, and perspired pretty freely under the use of cremor tartar, spirits of nitre, limejuice, and carbonate of potash, varied, according to her fancy and inclination.

On the 19th, as there was an increase of fever, I again had recourse to a moderate bleeding. The fever was not ushered in by chills; nor did there appear to be a sufficient remission to admit of giving the bark.

On the 21st, the fever had so much abated, that I prescribed an infusion of colombo and snakeroot.

There was but little alteration on the 22d.

On the 23d, at noon, I was called in haste to attend her, and was informed that she had laboured under a severe ague, which shook her considerably, though at the same time her skin was hot. Her fever, subsequent to the ague, lasted but an hour or two, and speedily subsided with a perspiration. During the short continuance of the fever, she was quite delirious, and complained much of want of breath, and frequently called for more air, though the windows were all open, and her friends diligently employed in fanning her. As her fever subsided, her pulse became ex-

tremely feeble, and her skin cool. She now became rational, and collected, and was sensible of her approaching dissolution. She called her children individually to her, and gave them her farewell charge—her husband she exhorted to seek religion, appearing much distressed at her situation. She exhorted him to be composed: she viewed death with the meek security and composure of a Christian. Notwithstanding her skin was cool and moist, and her pulse almost imperceptible, she complained of great heat and burning in the stomach, and could not be induced to take any thing warm, and was opposed to wine and spirits in any form. Her extremities became almost cold, and the pulse could scarcely be perceived to tremble beneath the touch. Dr. Roberts was called in consultation about nine at night; he proposed and gave laudanum and spirits of ammonia: it nearly strangled her. He repeated it again, after I left her. The next morning I found her still alive. In the course of the night, the child, five or six months gone, came away. She was composed, and much disposed to sleep. She did not complain of that burning in the stomach this morning, perhaps from greater insensibility. Her disposition to sleep became converted into coma, from which she was with some difficulty roused, to take a little panada, or wine and snakeroot tea. Life gradually declined, and she died about three P. M.

Mr. E. C. a patient of Dr. Casey's. I was called to this young gentleman on Friday, August the 8th, the day he died. I was told that he had been taken sick on Monday the 4th; that he had been twice bled, and once pretty copiously the preceding evening, at which time nearly a quart had been extracted; that he had taken purgatives, and the effervescing mixture, but no bark. When I saw him, which was about eleven, A. M. his skin was dry—his tongue but little moist, but not crisp and hard, and moderately covered with a white fur, though it had been scraped and cleaned in the morning—the surface of his body was yellow, as well as the adnata of his eyes—and purple blotches were observable in different places.—his pulse was somewhat



tense, but small, and very frequent, beating as often, as near as I could calculate, from one hundred and fifty to one hundred and sixty strokes in a minute. His mind was extremely desponding, and the fear of death preyed incessantly upon him. As his skin was dry and warm, I applied the warm water by affusion: it rendered his pulse fuller, though not less frequent. I prescribed enemata, and gave him limejuice and water—the effervescing mixture—muriatic acid—and cremor tartar—and applied blisters to the extremities and to the epigastrium, though with little expectation of relief. Upon my visiting him in the morning, he described to me the wretchedness and misery in which he had passed the preceding night; he had slept none, and passed the time in the greatest anxiety and distress. He said, that however anxious he was to live, he would far rather die, than experience another night of such perfect misery. His fever subsided towards evening, and left him in a state of extreme prostration and exhaustion; his pulse sunk, and became still more frequent, weak, and evanescent. I ordered him a little panada, and gave him some wine and water: it raised his pulse a little. In the mean time, Dr. Casey, who had been absent since the preceding evening, returned, whom I left with Mr. C. The Doctor called on me about sunset, and requested that I would see Mr. C. after supper. I should have remarked that with the subsidence of the fever, his mind became flighty and wandering. When I visited him after supper, I found his mind more unsettled than it had been. He would endeavour to rise and escape from confinement, and restraint was necessary to keep him in bed; he was constantly removing the dressings of the blisters, saying that there were pricklers applied to him; his pulse was tremulous, and scarcely perceptible. From the first that I saw him, deglutition was difficult, though it afterwards became less so. His mind became more disturbed, and it was not without considerable persuasion that he could be prevailed upon to take, from time to time, a little of the aromatic infusion of bark with wine, being suspicious that it was in-

tended to injure him. According to the advice of Dr. Casey, he took, about eight P. M. thirty drops of laudanum. It had, however, very little effect in composing him. He died about eleven P. M. Previously to his death, his abdomen became distended with wind, and his surface quite yellow.

Mr. C. was a very regular, steady, and industrious young man, aged about twenty-three, a native of Boston, though he had resided four or five years in the southern country. I attended him through an attack of bilious fever in 1821, which, although marked with pretty severe symptoms, he recovered from, in the course of four or five days. In his last illness I merely attended in consultation. He was taken on Monday and died on Friday.

From this period until the 20th of September a number of cases occurred, of a similar character, and in some instances terminating fatally within a short time. Where proper evacuations could be produced from the stomach and bowels, and the perspiration be restored, the patients soon recovered, under the use of bark and other tonics; though many instances were observed in which all efforts to improve the patient's condition were unavailing.

There are many cases which a physician meets with in the course of his practice, which defeat all his skill and exertions, and cause him to weep over the unavailing impotence of his profession. This is more especially the case in malignant cases of the endemic fever. If he refrains from employing evacuants, his patient dies; and if he ventures upon them, prostration and death are sometimes the consequences. Where the fever is attended with high arterial action, with a tense and strong pulse, there is the less danger; here blood-letting may be had recourse to with safety and advantage; and purgatives may be used with the best effects: and though, on many occasions, I have experienced the most sudden and salutary effects from the use of emetics, yet, on the contrary, when the epidemic becomes malignant, I have often found them injurious. This observation applies more especially to the use of tartarised anti-

mony, than which nothing is more serviceable in mild remittent and intermittent fevers ; yet in those of a malignant and aggravated character it should be exhibited with the greatest caution, or totally rejected ; for which ipecacuanha or white vitriol may be substituted, should an emetic be thought necessary.

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ART. III. *On the Malaria of Italy.*

By R. E. GRIFFITH, M. D.

THE fevers known under the name of malaria, throughout Italy, desolate a wide extent of that classical country, rendering it, in some places, a complete desert ; a desert, however, over which nature has shed her richest gifts of vegetation and beauty. These fevers, from their annual occurrence and fatal effects, have received considerable attention from the medical writers of that country, but most of them attribute its first appearance to too recent a period, namely, soon after the disappearance of the fatal plague which almost depopulated the Italian cities, during the sixteenth century ; that they have widely erred in this opinion, is obvious to all who are familiar with the ancient writers.

Not to multiply instances of the former insalubrity of the Campagna, and of the whole extent of coast of Latium, I need only refer to Strabo and Columella.

Professor de Matthæis, of Rome, in a dissertation he published some years since, on this subject, has, with great labour and classical research, adduced a multitude of facts in support of his opinion, that these fevers have annually appeared from the first settlement of Italy ; he also observes that the destructive fevers which are spoken of by the Roman historians, as devastating Rome during the republic, were, in all probability, identical with the malaria fevers of the present day.



From all the accounts, I am inclined to infer, that the air of the environs of Rome was always unhealthy, although circumstances, presently to be mentioned, counteracted its effects to a great degree.

Mr. Howard, who paid considerable attention to the subject, observes, " I will boldly affirm, that the whole plain between Rome and Tivoli, and the Pomptine Marshes, never was or could have been in a much better state than at present." In this assertion, Mr. Howard has hazarded an opinion, grounded, it is true, on the present nature of the soil, that is controverted by all the ancient writers.' He further says, " I have walked over a great part of the plain between Rome and Tivoli, and ascertained that the soil, which consists of a deep, white, crystallized sand, is generally covered with a coat of black mould, not half an inch, and often not a quarter of an inch, deep, which evidently proves that it never could be in a state of ordinary cultivation." That this tract of country was not highly cultivated during the time of the Romans is extremely probable ; it is well known that they were not an agricultural people ; deriving their supplies of grain from Sicily and Egypt, they devoted these plains to pasturage : but Mr. Howard has, like many theorists, taken his data and formed his opinions from isolated facts, when he asserts, that they are insusceptible of cultivation. All who have visited the Campagna di Roma must have remarked the extensive tracts that are now under tillage, and teeming with vegetation, along the Via Tiburtina, and Via Appia, to the Pomptine Marshes ; the fields in the immediate vicinity of Rome, and particularly those bordering on the Tiber, are used as meadows, and produce great quantities of the finest hay. It is certainly true, that there are some portions, and those of no inconsiderable extent, that are, and perhaps always have been, steril and unproductive.

But that the whole of this region of country was formerly very thickly inhabited, is a well established fact, if we are to credit history. From the foundation of Rome till the time of the republic, its inhabitants were constantly engaged

in long and bloody conflicts with the warlike and numerous inhabitants of its immediate vicinity. Pliny mentions more than fifty nations inhabiting Latium, at that time, and what is still more remarkable, that there were thirty-three towns within what are now the Pomptine Marshes, where nothing meets the eye of the traveller of the present day, but here and there a solitary post house, tenanted by wretched beings rapidly sinking under the effects of the noxious exhalations.

Even during the empire, the public roads leading through the Campagna were lined with villages, which, like those in the environs of London, almost formed part of the city; so much so, indeed, that Nero projected a third circuit of walls, which would have included nearly half the Campagna.

What, then, it may be asked, has produced the lamentable change and depopulation of this region? This question may be answered in a few words. It owed its ancient comparative salubrity, not to any natural advantages, but to the great population and constant tillage; to the extreme attention paid to draining the deposits of stagnant water which are so apt to accumulate on it; to the aqueducts traversing it in all directions, affording to the inhabitants, what is now wanting, wholesome and pure water; added to which, the forests and groves which then existed, protected them, in a great measure, from the miasmata arising from the low and marshy alluvion which borders the coast: all these circumstances combined, tended to mitigate the ravages of disease; yet such is the nature of the country, that it must always have prevailed to a certain extent; but when, on the overthrow of Rome, the inhabitants of the Campagna were driven to seek refuge within the walls of the city, the country became uncultivated, the aqueducts were destroyed, and their contents, poured out over the Campagna, giving rise to numerous stagnant lakes; the forests were cut down, and in fact, the whole region presented one wide scene of desolation and ruin. The soil now returned to its original unhealthy state; miasmata were copiously poured out; and

French and English authors, such is the progress they are making, and the mortality attendant on them, that the period cannot be far distant when Rome will become completely deserted: but fortunately they have been deceived in both; the fact, as stated by Dr. Clarke, an English physician, who has resided for some years at Rome, is, that except in certain places, the disease is not gaining ground in extent or violence. He gives the following as the number of patients admitted into the Hospital of San Spirito, during the years 1818 and 1819:

	<i>Admitted.</i>	<i>Died.</i>
1818	8137	363
1819	6134	258

These may appear as indicating a high degree of disease; but it should be borne in mind, that the far greater proportion of these patients were labourers from the Campagna, who come down during the summer season to work at the harvest; they are of course exposed to all the evils and vicissitudes arising from hard labour during a hot season, and from the want of proper accommodations in this almost uninhabited district, are obliged to pass the night in the open air, and on the very soil which gives rise to the noxious exhalations.

The malaria does not seem to affect the inhabitants of the country as readily or violently as it does strangers, in this coinciding with the usual course of all endemic fevers, as the jungle fever of India, and the bilious and yellow fevers of the southern section of our country. By the Roman bills of mortality from 1767 to 1776, inclusive, it would appear that the proportion of deaths, during that period, was not greater than it was in the sixteenth and seventeenth centuries. The average of deaths is 3.99 per cent.; in 1818 and 1819 the proportion was somewhat higher, amounting to 4.12 per cent. This may be accounted for by the greater influx of strangers during those years, as well as to the greater violence of the disease during that period. It is well known that all diseases of this character are



much more prevalent and destructive in some years than in others. The environs of our own city have lamentably afforded a striking instance of it during the last three years.

But notwithstanding the greater prevalence of the disease, the number of inhabitants in the city of Rome has increased rapidly within that period. In 1813, according to Professor Koreff, it was 80,000, whilst in 1821 it amounted to 146,000; yet it must be admitted that Rome is not as populous as it was during the last century, for in 1775, the number of its inhabitants amounted to 165,000; but the diminution may be satisfactorily accounted for on other grounds than the mere effects of disease. This decrease was owing to political causes; and the reverses the Papal authority has met with during the end of the last and commencement of the present century.

The degree and violence of the fever depend, in great measure, on the state of the weather; when the summers are dry, there are comparatively few cases; but if, on the contrary, much rain falls, the hospitals are crowded. When these rains take place early in the season, there is always reason to expect that the disease will assume a violent form.

The season at which it makes its appearance is about June, and it lasts until November; the sporadic cases occurring after and before this period are, in general, relapses of those of the preceding season. The month of August is that in which the greatest number are attacked. Dr. Clarke states an interesting fact with respect to this disease. "It frequently occurs," says he, "that in the acute diseases of the winter and spring, in subjects who, during the preceding autumn, have had intermittent, that the fever attending their present disease, let it be what it may, assumes the intermittent form, requiring, when the inflammatory symptoms are removed, the employment of bark." During the two last years, I have met with the same thing in persons who had been attacked with the prevailing epidemic which prevailed so greatly in the outskirts of this city, every disorder they were attacked with during

the winter months appearing to put on an intermittent character.

Bark is the exclusive remedy relied on by the Roman physicians for the cure of these fevers. To the use of the mercurial purgatives, they have great repugnance; yet in almost all the cases I saw, there appeared to be evident marks of great hepatic derangement. The quantity of bark administered is almost incredible; in the Hospital of San Spirito, in 1818, there were 3,200 pounds used, and in 1819, 2,960 pounds. There is a common remedy much resorted to by the lower class of people, and it is said with much success, which is strong coffee, taken early in the morning.

From what has been said, it must appear evident that the malaria fever resembles, in its characters and effects, the fevers of all miasmatic districts, and that the only means of preventing its further ravages, are constant attention to agriculture and draining. These proved effectual during the time of the empire, and would, in all probability, again restore the Campagna to a comparatively healthy condition: but this is hopeless under the present oppressive laws, which deter any one from attempting it. The whole of the Agro Romano, a district of thirty leagues in length, and ten or twelve in breadth, is in the hands of ten or twelve farmers, who are satisfied with receiving what they can from it, without attempting to improve it by culture: thus permitting the pestilence to reign over it undisputed.

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ART. IV. *Observations and Experiments on the Water of the Summerville Mineral Spring.* By WILLIAM CHURCH, M. D.  
Read before the Pittsburg Medical Society.

THE Summerville mineral spring is very pleasantly situated on the estate of Mr. John S. Scully, in St. Clair town-

ship, Alleghany county, Pa. four miles south-west of the city of Pittsburg, two miles south of the Ohio river, and about the eighth of a mile east of Chartier's creek. It issues from six or eight fissures in a rock, on the side of a small hill, and discharges about a gallon of water per minute, which is conveyed through a tunnel into a reservoir, from which it is pumped to supply the bath house. The water in the spring is, when undisturbed for a few hours, covered with a thin, whitish pellicle; this appearance is readily observed early every morning. It deposits a yellow ochry sediment on the sides and bottom of the spring, and on those substances over which it flows. Its taste is ferruginous, and slightly sulphureous, over which the peculiar pungency of carbonic acid predominates. When first taken from the spring, it is clear, lively, and sparkling; but if exposed, in an open vessel, to the action of the air, soon becomes slightly turbid and vapid. At five, P. M. on the 25th of August, 1823, the temperature of the water in the spring was fifty-four degrees of Fahrenheit's thermometer, while that of the surrounding atmosphere was eighty-five degrees of the same scale. It is rather heavier than common spring water, and exhales the peculiar odour of sulphuretted hydrogen gas. Glass vessels in which it is kept for some time, lose their pellucidness, which cannot be restored. Iron and tin vessels in which it is kept, or boiled, soon become lined with yellow, ochry incrustations. It has been satisfactorily ascertained that the hill from the side of which the spring issues, contains iron ore, mineral coal, and limestone. Calcareous substances are found in abundance about the spring.

The medicinal properties of this water have been known to some persons living in the neighbourhood of the spring, almost ever since the first settlement of the country: these persons, after having incidentally drunk of the water, observed that it gave them keen appetites, and powerfully promoted digestion; hence they very appropriately called it "*the hungry spring*."



I made the following experiments on the water.\*

*Experiment 1st.* It gave the infusion of purple cabbage at first a beautiful bright red, which in a few minutes changed into a clear bluish green.

*Experiment 2d.* It reddened the infusion of litmus.

*Experiment 3d.* Litmus paper became slightly reddened, but on drying was restored to its original blue colour.

*Experiment 4th.* It changed the colour of the infusion of Brazil wood into a lake red.

*Experiment 5th.* It reddened paper stained with Brazil wood.

*Experiment 6th.* On the infusion of turmeric it produced a light brown colour.

*Experiment 7th.* Paper stained with turmeric, it gave a light brown shade.

*Experiment 8th.* Lime water gave a copious white precipitate, which was soluble with effervescence in muriatic acid.

*Experiment 9th.* Oxalic acid gave a white precipitate.

*Experiment 10th.* The solution of soap in alcohol became turbid.

*Experiment 11th.* The tincture of galls at first gave the water a clear violet colour, which in a few minutes changed into a purplish red.

*Experiment 12th.* Gallic acid effected the same change as the tincture of galls.

*Experiment 13th.* Muriate of barytes produced no change.

*Experiment 14th.* Alcohol, added to an equal quantity of the water, produced no change.

*Experiment 15th.* On the addition of the solution of the acetate of lead, the water instantly became turbid, and deposited a white precipitate, which, on standing, was much increased.

*Experiment 16th.* Pure ammonia at first produced no

\* I am much indebted to my friend, Dr. William F. Irwin, for his kind assistance while making these experiments.

change, but after a few minutes the water became turbid, and slowly deposited a white precipitate.

*Experiment 17th.* Caustic potash produced a slight turbidness.

*Experiment 18th.* Nitrate of silver instantly produced a white cloud, and gave a white precipitate, which, on standing exposed to the light, became more or less coloured: on adding a few drops of diluted sulphuric acid to this precipitate, muriatic acid gas was evidently evolved.

*Experiment 19th.* On the addition of nitrate of mercury small white flocculi appeared in the mixture, and on standing, gave a darkish precipitate.

*Experiment 20th.* Nitric and muriatic acids caused a slight disengagement of fixed air.

*Experiment 21st.* Solution of arsenic gave the water a light brown appearance.

*Experiment 22d.* Carbonate of potash slightly darkened the colour.

*Experiment 23d.* Muriate of lime produced a turbidness, after which a white precipitate was slowly deposited.

*Experiment 24th.* Characters traced with the solution of the acetate of lead, on unsized paper, exposed to the vapour of the heated water, became darkened.

*Experiment 25th.* A piece of polished silver, immersed for some hours in the water, became tarnished.

*Experiment 26th.* Blowing air from the lungs, through a quill, into the water, effected no change.

*Experiment 27th.* After one pint of the water was reduced by boiling to one gill, a solution of the carbonate of ammonia, (prepared with a portion of that salt which had been exposed, spread on paper for a few hours to the air,) was added, which produced no change: a solution of the phosphate of soda was now added to the mixture, when a white precipitate was thrown down, which, on standing, was increased.

*Experiment 28th.* By boiling, a yellowish ochry precipitate was deposited.

*Experiment 29th.* After the water was boiled and filter-

ed, lime water, oxalic acid, and tincture of galls, produced no change.

*Experiment 30th.* The boiled water slightly reddened the infusions of litmus and Brazil wood ; and

*Experiment 31st.* It changed the infusion of purple cabbage into a greenish blue.

*Experiment 32d.* Diluted sulphuric acid, added to a quart of the fresh water from the spring, caused a slight effervescence, and a consequent disengagement of fixed air ; produced no turbidness, nor, on standing, gave any precipitate, but it caused a slight coagulation : after standing some hours the mixture was carefully filtered through unsized paper, whereby the coagulum was collected on the filter, dried, and proved to be a combustible substance.

#### RECAPITULATION.

The 1st experiment indicated the presence of an uncombined volatile acid, which escaped in a few minutes ; after which the water changing into a bluish green, indicated the presence of an uncombined fixed alkali. Experiments 2d, 3d, 4th, and 5th, also indicated the presence of an uncombined acid. The 6th and 7th experiments proved that part of experiment 1st which indicated the presence of an uncombined fixed alkali. Experiment 8th proved that the acid indicated by the first five experiments, was carbonic acid. The 9th experiment proved the existence of lime, and experiment 10th showed the existence of an earthy salt.

The 11th and 12th experiments, according to Westrumb, proved the existence of carbonated iron, an alkaline carbonate, or earthy salt, and sulphuretted hydrogen gas.

Experiment 13th proved the non-existence of sulphuric acid, which the 14th experiment confirmed ; for, agreeably to the observations of Mr. Kirwan, if any of the sulphates were present, they would have been precipitated by the alcohol. The presence of muriatic acid is inferred from experiment 15th, which produced the muriate of lead.

Experiments 16th and 17th showed the existence of earthy matter. The presence of muriate of soda is infer-



red from experiments 18th and 19th; of an excess of carbonic acid from experiment 20th.

The 21st experiment indicated, according to Westrumb, the presence of sulphur, but I think that the change in this experiment was effected by sulphuretted hydrogen gas. Experiment 22d showed the existence of metallic matter, which the 11th and 12th experiments proved to be iron. The presence of an alkali is inferred from experiment 23d: of sulphuretted hydrogen gas from experiments 24th and 25th.

Experiment 26th showed that the lime detected by the oxalic acid, in experiment 9th, was the carbonate, and that the water contained no lime in an uncombined state, which would have given it a milky appearance.

The earthy matter indicated by the 16th and 17th experiments, is, by experiment 27th, according to Dr. Wollaston, proved to be magnesia, and that the earthy salt indicated by the 10th experiment, is the carbonate of magnesia.

The 28th and 29th experiments prove that the solvent of the iron and lime was a volatile, and not a fixed one; for, on the application of heat, the menstruum was carried off, and the iron and lime deposited.

The 30th experiment indicated the presence of a mineral acid, which the 18th and 19th experiments showed to be the muriatic.

Experiment 31st indicated the presence of an uncombined fixed alkali; for had it been a volatile one, it would have been carried off along with the carbonic acid, by the application of heat. This alkali I presume to be soda.

The 32d experiment was instituted to ascertain whether barytes, or any of its salts, were present: if present, they would have given the water a milky appearance, and instantly caused a white precipitate to fall down. This part of the experiment, therefore, proves the non-existence of barytes. The slight effervescence was caused by carbonic acid. The coagulum indicated, according to Dr. Ure, that a minute portion of bitumen was present.

Agreeably to the foregoing experiments, this water holds in solution, carbonic acid gas, carbonate of lime, carbonate

of iron, sulphuretted hydrogen gas, carbonate of soda, muriate of soda, carbonate of magnesia, and bitumen; and from the quantity of the precipitates thrown down by the different tests, I think they probably prevail in the order named.

The most obvious effect of this water, is that of a mild laxative and diuretic. It also strengthens the stomach, by increasing the appetite and powerfully promoting digestion. This effect is more apparent after taking a few glasses before breakfast. Some persons have injured themselves by taking the water in too large quantities. It is proper to begin its use by taking one or two, or at most, three tumblers full at first, and increasing the quantity drunk, and the frequency of the draught, as may be most agreeable to the feelings and grateful to the stomach. It may be proper to observe, that whenever a person feels the least sensation of coldness, distension, or oppression of the stomach, he must at that time drink no more of the water, for every draught after this will prove injurious, and thereby counteract its remedial effects, disappoint the hopes and expectations of the invalid, and thus, undeservedly, bring discredit on the spring. The use of the water excites in many persons an agreeable exhilaration of spirits, while in others it produces a temporary drowsiness, and in some causes nausea: but for the most part it proves agreeable to the stomach and feelings.

The most proper time for taking the cold shower bath is ten or eleven o'clock in the forenoon. The bathing should not be repeated during the day, unless by the advice of a physician.

During the past summer this water has been found serviceable in cases of gravel, chronic rheumatism, dyspepsia, hemorrhoides, asthma caused by gastric irritation, and to convalescents from fevers and other diseases. It has also been of essential service in some cutaneous diseases.

A young woman was for a long time sorely afflicted with a chronic obstruction of the liver, which eventually produced obstinate jaundice. For three or four months after the ob-

struction of the liver, and consequent jaundice, were removed by the appropriate remedies, her biliary secretion remained very irregular and defective, her digestive organs were much disordered, and her general system much debilitated; when, agreeably to my advice, she commenced drinking the water, and by persevering in its use, was in a few weeks restored to good health.

The laxative and diuretic effects of this water, will cause it to prove injurious to persons labouring under consumption, by increasing their general debility: and further, the carbonic acid and iron, will, by accelerating the circulation, do them much harm. It is improper in all cases of visceral obstruction, and will injure those whose systems are surcharged with bile.

This water, being a powerful chalybeate, promises much in cases of scrofula, chlorosis, and to children whose countenances are pale and languid, suffering from worms. In a word, it will prove serviceable in all diseases arising from debility, unaccompanied with any visceral obstruction: and will prove injurious where there is a preternatural determination of blood to the head, and in all diseases arising from repletion.

In the summer of 1823, a lady who laboured under confirmed consumption, contrary to my orders, repaired to the spring and drank the water, which in a few days brought on a severe attack of hemoptysis, and thereby accelerated the fatal event, which took place soon afterwards.

M. Desportes' cautions respecting the use of water containing carbonic acid, are very important, and ought to be strictly observed.\* Having proved that the Frankfort water contains carbonic acid,† the following case, that occurred at the Frankfort Springs, in the summer of 1822, will serve to enforce the caution of M. Desportes.

A gentleman of Pittsburg, aged about thirty-six years, of a sanguine temperament, and in whose family there was a hereditary predisposition to mania and diseases of the

\* Philadelphia Medical and Physical Journal, vol. vii. p. 188.

† Ibid, vol. vi. p. 53.



brain, and in whom this predisposition was increased by free living, repaired to the Springs, drank freely of the water, and took the cold shower bath three times a day, and often, when he was heated with exercise, became gradually deranged, and in the course of three weeks after he arrived at the Springs, was brought home furiously maniacal, of which he died within a month or six weeks afterwards. This is a very important fact, and exemplifies the correctness of Desportes' statements; and although it did not occur at the Summerville Spring, it is too important not to be recorded.

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ART. V. *Description of a Machine Bed, for the use of Patients with Fractures of the Lower Extremities, and of others whose situation does not admit of their being moved.* By B. H. Coates, M. D. Member Am. Philos. Society, &c.

THE utility of contrivances to assist patients affected with fractures of the lower extremities, and with other injuries and diseases which do not admit of their being raised or moved without mischievous consequences, in removing their fæcal discharges, is now, I believe generally acknowledged. Having been charged, during a large part of my medical studies, with the care of a constant succession of these cases, in the course of five years' residence in the Pennsylvania Hospital, I was led to make many comparisons of different methods of answering this purpose. These inquiries have resulted in the invention of an apparatus, which I am about to describe.

The earliest contrivance, within my knowledge, which has been used, in the above named institution, for the purpose of which we have spoken, is a mattress cut into segments, one of which can be removed, and thus leave a vacancy for the introduction of a flat bed-pan. This simple mechanism will answer tolerably well, but it is obviously

defective, and is now totally disused. In drawing out horizontally a portion of the bed of a patient with a fractured thigh, it is impossible that the dressings can retain their proper positions ; especially when the removal is made, as it frequently must be, by unskillful persons. The bed-pan, too, is liable to similar inconveniences ; to which we may add, that there are no means of confining the smell.

The next apparatus employed, was that invented by Henry Earle, Esq. of London, a surgeon of acknowledged eminence. That part of his improvements in sick beds which was adopted at the Hospital, and which was applicable to our present purpose, consisted of a false bottom to the bed, with a suitable perforation, and a mechanical apparatus for raising it, together with the patient who lay on it, sufficiently above the bed to admit of the introduction of a tin pan beneath him. This answered much better than the last ; but inconveniences were also found in its application. It was troublesome, requiring much assistance, and keeping the patient in an uneasy state. In one instance, the suspensory apparatus, by some means, gave way ; and the patient, together with all his dressings, was precipitated to the lower bed. It is also obvious, that a sheet of canvass, or sacking, when suspended by the edge, and made to support the weight of a man in the middle, will always sink in the middle, and thus disturb the action of the splints and dressings.

The inconveniences arising from the use of Earle's bed, prevented its being applied in any very large number of instances ; but one generally being kept in order at a time. They led my ingenious room-mate and senior officer, Dr. J. Rhea Barton, to the construction of an improved apparatus, which I need not describe minutely, as an account of it is given at length in the fifth volume of the *Eclectic Repertory*.

In this apparatus, a windlass was attached beneath the board bottom of an ordinary bedstead, having a large perforation in the centre. This bedstead was surmounted by a mattress having a similar perforation, fitted by a cushion

By means of the windlass, and by a very ingenious arrangement, the cushion was, in one movement, withdrawn, and the pan substituted in its place ; and in the returning movement, the pan was conveyed away, and a board supporting the cushion again drawn up against the patient, so as to fill up the circular vacancy in the mattress. The patient, during all this time, remained at rest.

The principal objection to this plan was, that the cushion was supported in its place only by the tension of cords. As the machinery had to support the weight of the heaviest and most projecting portion of the patient's body, the cords were gradually elongated by the pressure, and it was found impossible to keep the cushion on or near a level with the rest of the mattress. The consequences of this giving way to the pressure of the patient's nates, at the risk of bringing them in permanent contact with the circular edge of a piece of board, may easily be imagined ; and were accordingly found very inconvenient. Sloughs, in some instances, occurred from this cause.

In the year 1816, and about a year after the invention of Dr. Barton, I made a working model of the bed which I am about to describe ; and it was shown to Dr. Hartshorne and to the late Dr. Dorsey ; but as the Hospital was already well provided with the others, no new ones were made, and I resolved to wait till they were required for actual use. In the winter of 1817, I showed a working model to Dr. Physick, which he exhibited in every course as long as he continued to lecture on surgery. It was not put in practice till the winter of 1818, when some of the bedsteads were made for the Hospital ; and they have been in constant use ever since. Our much respected Professor of Anatomy, and formerly of Surgery, Dr. Physick, who permits me to give him the appellation of my friend, has employed, in private practice, a very simple apparatus. A circular opening is made in both the mattress and the board bottom of the bedstead, and this opening is filled by a cushion, as in two of the above enumerated contrivances. This cushion rests upon a plain slider. To use the appa-



tus, an assistant goes under the bed, and removes the slider with his hand, when the cushion falls out ; a pan is then set beneath the aperture, on any convenient support, and the apparatus is then ready for use. After its employment, the pan is removed, and the cushion is then introduced and retained by the assistant with one hand, while he replaces the slider with the other. This simple apparatus requires no improvement when used in private practice, for which it was invented : as, however, it requires a high bed, and gives some extra trouble to the assistant in getting under it, neither of which is desirable in hospitals, I have not considered it as superseding my machine for the use of the latter institutions. This is also the expressed opinion of the distinguished surgeon who was its inventor.

The same, however, is not the case with an apparatus which my ingenious and worthy friend, Dr. Caspar Wistar, is now employed in preparing. It consists of a machinery adapted to iron bedsteads, which are about to be more extensively introduced into the Hospital. When this apparatus shall be completed, the public will, it is hoped, be made acquainted with it.

The machine which I have procured to be made, requires a hair mattress, with a large circular aperture exactly in the centre. A mattress of this material is the best adapted to fractures of the lower extremities ; affording a firm and uniform surface, upon which the limb can be extended, and the splints and dressings applied. Without a firm level in the bed, indeed, it is impossible to treat fractured thighs with success. With the same views, and for the application of the machinery, the mattress is laid on a smooth surface, composed of boards firmly fastened together. In this board bottom of the bedstead is a circular opening, similar to that in the mattress, but rather exceeding it in size. The openings in the mattress and the board bottom, respectively, are filled, in the ordinary state, the one by a cushion, the other by a circular board, to which that cushion is attached. The circular board is connected to the board bottom of the bedstead, by a hinge, which allows it to fall freely down, when

unsupported. Beneath all this is a sliding piece of wood, of a complex form, and with a long, projecting handle. This slider, when moved in one direction, withdraws support from the circular board and its cushion, and allows them to fall from beneath the weight of the superincumbent patient, while at the same time, a tin pan is drawn from the opposite side, directly under the opening. The patient has thus a free opportunity of making his evacuations. When this is done, the slider is thrust in the contrary direction, and in this motion removes the pan, impels the cushion and its circular board upwards, into their situation in the bed, and then leaves a solid, firm support beneath them.

The slider moves in a pair of *cleets*, or strips of wood, of the common construction, and possesses a long, flat, iron handle, of which one end extends beyond the side of the bed, and is turned up at the extremity, to afford a hold for the patient's hand. Of the other end we shall shortly speak. The slider is itself composed of a piece of board, of an oblong form, and with two openings, or wide holes in it. One of these, situated at that end which is more remote from the handle, and which we shall call the *lower* extremity, is circular, and of the width intended for the pan. The latter is secured beneath this circular opening, by slipping it into three cleets, which keep its rim closely applied to the circumference of the aperture. These cleets should be so placed, that, when the apparatus is completed, the pan may be removed in a direction parallel to the side of the bed, and from the head towards the foot. The pan may, if judged proper, be secured with a spring or a latch ; but we have found this altogether unnecessary.

The remaining aperture of the slider is placed as near the last as the necessary strength of the materials, and the space required for the attachment of cleets for the pan, will allow. This opening is oblong, semicircular at the lower end, and rectangular at the other. Its width is a little more than that of the round opening ; its length exceeds it by one-half. The use of this opening is to allow the cushion and its circular board to rise and fall, in the motions of the

apparatus. These fall as above specified, by their own weight, and the pressure of the patient's body upon them. They are pushed up again, when the slider is protruded in the requisite direction, by the end of the iron handle which, after running over a part of the slider, projects several inches into the oblong aperture, and is bent into a semicircular form, so that its extremity strikes the circular board at about six inches from its hinge, and in a direction to thrust it up into its place.

The remaining portion of the slider is a smooth board, and is made, in the beds at the Hospital, as large as the space allowed for its motion admits. Its length, when admissible, may be equal to the diameter of the circular board. The iron handle is sunk into its upper surface, through its whole length, and secured by screws. The cushion gradually increases in width from the top to the bottom; the circular board which sustains it is still wider, and is itself also widest at the bottom; and the opening in the slider through which it falls, is wider than any part of them. An artist will at once discover that this is necessary to facilitate their motions. The slope of the cushion should also be greatest at the side most distant from the hinge, as there is the most danger of entanglement at this point, and in moving the cushion upwards. The hinge should also be at least an inch from the edge of the circular board.

This apparatus may be attached in any direction under the bottom of a bedstead, provided the handle be placed in a suitable situation for use, and the pan, when protruded from the patient, be convenient for removal. In the bedsteads in use at the Hospital, the whole is placed obliquely; the handle being within reach of the patient's arm, and the pan, when protruded, near the foot of the bed, convenient for removal, and in a situation where the patient is the least liable to inconvenience from unpleasant smell. The beds, however, in this arrangement, require a certain width to admit room for the machinery.



Fig. 1.

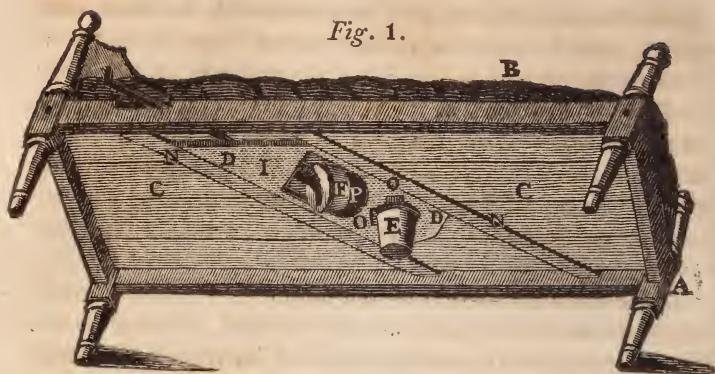


Fig. 2.

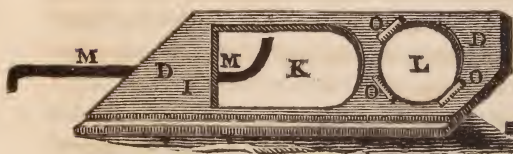


Fig. 4.



Fig. 3.

Figure 1, in the accompanying sketch, is a perspective view of the apparatus as in actual use ; in which may be seen the board bottom, part of the mattress, the slider, the pan, and the cleets or strips of wood, in which the sliding parts move. The oblong opening in the slider is in view ; the circular one is closed and concealed by the pan. The end of the iron handle is seen at the bedside, in a convenient situation for the right hand of the patient ; a deep notch being cut in the side of the bedstead, for the rod to pass through. The curved end of the iron handle is just beginning to push the circular board and cushion up towards the level of the bed. The pan is seen at the opposite side near the foot of the bed.

Figure 2, represents the slider, and the long iron handle or rod.

Figure 3 is a view, and figure 4 a plan, of the cushion, circular board, and iron hinge.

As the same letters refer to the same parts on all the figures, I shall give the references in common.

AA. the bedstead.

BBB. the mattress, of which only one edge is visible. As the peculiarity of the mattress consists only in its having a circular hole worked in the centre, it is not represented.

CC. the board bottom.

DD. the slider.

E. the pan.

F. the obliquely conical cushion.

G. the circular board.

H. the iron hinge, with its joint situated an inch or more distant from the edge of the circular board.

I. the portion of the slider which supports the circular board and cushion, when pushed up.

K. the oblong opening in the slider, one end being circular and the other rectangular.

L. the circular opening in the slider.

M. the iron handle or rod; one end pushes against the circular board, G. the other is for the patient's hand.

The handle is seen to be secured to the slider, at I, by four screws.

NN. the cleets which support the slider, and in which it moves.

OO. The three small cleets which support the pan; two of which run parallel to the bedside, and the third is placed at right angles to them.

P. the circular perforation in the board bottom.

The dimensions of a bed made on this plan were six feet long by three feet one inch in width, in the board bottom; or, according to the carpenter's term, in the rabbet. The slider was fourteen inches wide, and, in the middle line, thirty inches long. The oblong aperture one foot in length, by eight and a half inches in width; the circular opening, seven inches and a half in diameter. The circular board was also seven inches and a half in width on its lower surface; its upper surface being somewhat smaller. The circular aperture in the board bottom, large enough to ad-

mit the circular board to move with perfect freedom in and out of it. The cushion six to six and a quarter inches wide at the top—seven inches to seven and a quarter, at the bottom. The perforation in the mattress, of a corresponding form, but rather larger dimensions. The pan, including the rim, nine inches and one-third—within its cavity, at the mouth, seven inches and a half.

The bedstead should be strong, and requires a wide, rectangular notch, of sufficient depth, to be cut in its upper edge, to admit the passage of the handle. To find this point, take the distance from the centre of the circular opening in the slider, to the upper end of the plain part, I, assuming the length of I, at least five inches, and if the bedstead be sufficiently wide, seven and a half; with this distance, and taking the middle of the perforation in the board bottom as a centre, describe a portion of a circle so as to strike the right side of the bedstead. If this intersection be commodious for the patient's hand, the end of the slider may be sawed off to correspond with the side of the bedstead; if not, a better should be chosen; but the part I. should be left as near the length of the circular board as possible. The slider should then be pushed down as far as is necessary to support the circular board with firmness, and the lower extremity also sawed off so as to prevent its extending beyond the side of the bedstead. Should the bedstead not check the motion of the slider, so as to indicate its proper extent in each direction, it is hardly necessary to add, that pegs should be driven in, so as to answer the same purpose.

It is manifest that this apparatus can be easily adapted to iron bedsteads. I have, accordingly, made a drawing of the necessary arrangement, and am in the course of getting one executed, which may be offered, should it be thought proper, for hospital use.

The advantages over various other contrivances contemplated in the formation of this machine, are principally its suffering the patient to remain at rest, and its affording a



firm support for the cushion, not yielding to the pressure of the patient's body, as those do which depend on the tightness of ropes. In addition to this, the machine can be worked, with great ease, by the patient himself, provided he have the use of his right arm. One bed at the Hospital is made so as to be worked by the left hand, for the use of patients who, in addition to other injuries, have the right arm disabled. The facility with which the patient can thus help himself, without the attendance of an assistant, is a very material addition to the comforts of a person confined with fractures, and is, accordingly, highly valued by them. Should it, however, be impossible or unadvisable for the patient to help himself, the machine can be, with equal ease, worked by an assistant.

The pan, with its offensive contents, is protruded to near the foot of the bed, remote from the smell and respiration of the patient, and remains well covered, tight, and in a situation convenient for removal. Not the least smell is perceptible from the apparatus, on entering and remaining in the room; even when it has been recently used.

In simplicity, this method exceeds those of Earle and Barton, while it yields to the mattress cut into segments, and to the bed of Dr. Physick. Its strength, however, is such, that for four or five years, it answered entirely well, without receiving *the least repair*, though six were kept in use, and all the patients with fractures of the lower limbs received at the Hospital, during that period, were accommodated upon them. The part which has first given way is the slider, a piece of wood much weakened by the large incisions made in it; but a part easily replaced. Those in which this has happened, are, of course, unfit for use. Until this took place, they all gave the most entire satisfaction to all concerned; and were, indeed, found a very great convenience by both patients and attendants. It is certainly, however, liable to the very material fault of affording a shelter to vermin, between the slider and the board bottom. This disadvantage, which it possesses in common

with all wooden work about bedsteads, is to be obviated by substances poisonous to those animals, or by constructing a skeleton apparatus of iron, and attaching it to an iron bedstead.

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ART. VI. *New Division of Apoplexies*. By M. A. SERRES, Chevalier of the Legion of Honour, one of the Physicians of the Hospital of la Pitié, Chief Director of the Hospitals, &c.—Translated from the original by *George B. Taylor*, Student of Medicine.—(Concluded.)

“Antequam de remediis statuatur, primum constare oportet, quis morbus et qua morbi causa, alioqui mutilis opera, inutile omne consilium.”

BAILLOU, lib. i. Cons. XIV.

THE observations made relative to cerebral apoplexies with hemiplegia, whether of one or both sides, confirm entirely the principles laid down in various parts of this memoir. The following relation describes a variety of cerebral apoplexies different from any instance given by the writers on apoplexy.

Francis Blavignere, messenger, sixty-nine years old, patient of the Hospital of Pity, was taken, on the morning of the 16th of April, 1816, with vertigo, followed by a fall on the back part of the head, and not on the side. An hour after the accident, I found him lying on his back, having the face red and tumefied—the cervical veins very much engorged, and swelling at each inspiration—the eyes were closed—the pupils equally dilated—the mouth gaping—breathing very slow—the expiration very long—and the pulse hard, frequent, and vibrating. The patient had occasionally a general convulsive motion—sensibility obtuse on both sides. He was bled from the jugular vein—sinapisms and purgative injections administered. Afterwards the symptoms remitted—the sensibility returned somewhat—and there were slight involuntary motions of the lips. Co-

pious discharges from the bowels were produced by the injection.

In the night he fell out of bed. At two A. M. I found him motionless—the face violet coloured, engorged—the veins tumid—lower lip hanging—the eye dull—pupil very much dilated—respiration stertorous, interrupted, very seldom—pulse very frequent, but concentrated and small. No excitement could be produced, and death ensued at five A. M. twenty-five hours from the first attack.

*Dissection.*—I could not be mistaken as to the seat of this apoplexy, after the analogy of the symptoms with my former observations: the circumstance of the fall of the patient on the back, and not on the side—the kind of convulsion that had agitated all the limbs at the same time, at the beginning of the fit—the immobility occurring after the second fall, and their entire insensibility—all these phenomena, together with the sort of asphyxia which preceded death for some hours, made me presume, that we should find effusion within the PONS VAROLII. The probabilities in favour of this prognostic appeared to me so great, that I mentioned it to my pupils previous to the opening of the body.

The skull being opened, we found, first, an effusion of blood in the occipital fossa, and soon after the pons varolii torn at the right lateral portion, and somewhat in front. The opening was unequal, presenting two borders torn, and in flaps; the cavity, which would have contained a small egg, had very thin walls, and showed on its interior a multitude of capillary vessels stopped up by a molecule of black blood. I caused the pupils to observe that the first cerebral layers which surrounded this internal lamen of the cavity, were of a greenish yellow, resembling the colour observed on the skin after the bite of leeches.

The lungs were emphysematous, their cells distended by air—certain parts resembled the vesicular lungs of frogs and reptiles—a fact which I repeat appears to me to be altogether attributable to the paralysis of the two pneumogastric nerves. The stomach, as well as the small intes-



tines, were sound—the large intestines were inflamed, but without ulceration.

#### CONCLUSION.

It is established, I think, in this memoir, that the imperfection of the diagnosis of apoplexies is owing to incorrect observations, or a misinterpretation of facts. I have shown that since the hypothesis of Galen, until the nervous apoplexies modified by the doctrine of Brown, more attempts have been made to divine the nature of the disease than to understand it. My principal object has been to refute the division of serous and sanguineous apoplexies, always objected to since its establishment, but never overturned, because the doctrine proposed in its stead was of no value. It has been shown by me, that the mode of viewing apoplexies founded on the compression produced by the effused fluids, has been so deeply rooted as to lead to the proposition of perforating the skull to let them out. I have set apart an entire paragraph to refute this error, to which I think it very important to call the attention of observers. I have multiplied experiments on living animals—I have modified them in different manners in order to reduce this problem to its most simple terms, and I have gained the experimental certitude that the effused fluids are of no consequence in the production of apoplexies. This conclusion, analogous to that which my experiments on animals have produced, is fully confirmed in man, for we have seen apoplexies without effusions, and effusions without apoplexies. These incontestable facts would doubtless long since have sufficed to overturn the old hypothesis, had it not been for the incorrectness of the mode of philosophising in medicine, which has stricken with sterility a part of the labours of observers.

It is making one step towards truth to have shown the false appearances that have been taken instead, and there is reason to believe, that in avoiding the paths where my predecessors have gone astray, we may arrive at less equivocal conclu-

sions. Whether we have effected this object or not, is to be determined by the experience of other observers.

It is proper for me to remark throughout, that the method I have followed appears to me the only one likely to direct us, with any certainty, in the labyrinth of organic diseases of the encephalon. There is nothing absolutely certain in medicine, but the symptoms. In the words of Valsalva and Morgagni, the true course of pathology is to ascend from the symptoms to the seats of disease, and establish their relations with the organic alterations presented to us by dissection.

All this paper rests on this principle—for as soon as I had collected a great number of observations, and formed the idea of comparing them together, I was forcibly struck with the symptomatic differences presented by them relative to the presence or absence of palsies. The question necessarily resulting from this first observation was, whether there was an appreciable coincidence between the difference of these apoplexies, and their organic seats. I must acknowledge that the solution exceeded my expectation.

Whenever in the course of an apoplexy I have remarked the absence of paralysis, I always found, on dissection, that the brain was uninjured; but the membranes were altered in different degrees, and with these different degrees of alteration the effusions of different character coincided. If the irritation had been intense, sudden, and of short duration; were the membranes inflamed partially or universally, the fluid effused within the ventricles, between the convolutions, or in the commencement of the spinal canal, was sanguineous or sero-sanguineous. This effect was so connected with the cause, that if the irritation of the membranes was present in both or one of the ventricles, the sanguineous effusion was confined to that part. If, on the contrary, which was much more rare, I could discover this irritation only on the exterior of the encephalon, the sanguineous fluid was only found on the surface; the ventricles were empty, or the liquid contained was nothing but simple serosity.

Passing, then, to apoplexies with paralysis, I found a relation much more easily perceived between this symptom and the constant disorganization of the encephalon. Hemiplegia, and alteration of the lobe opposite to the paralysis, was found in all my observations, and appeared in some degree synonymous.

If accident had nothing to do in the manifestation of these phenomena, it should be easy, in my opinion, to assign to apoplexies their characters, place and name. The apoplexies without palsy, having their seat in the membranes the denomination of *meningeal apoplexies* appears to me most proper to recal this principal trait, as that of *cerebral* apoplexy reserved for the disease complicated with paralysis, indicates that the seat of the affection is in the encephalon, which is somewhere materially altered in structure.

A necessary consequence of the preceding is, that all apoplexies have their seat in the encephalon or in its envelopes. To establish this assertion, it becomes necessary to understand on what foundations sympathetic apoplexies have been admitted, whose presumed seat has been supposed in the intestinal canal. I have done this in proving, from actual observation, that all the gastric or intestinal irritations seen in apoplectic subjects were accidental, and produced by the emetics and purgatives, or other medicines, administered during their course. It is to be remarked, in fact, that if an apoplectic has taken strong doses of emetics, it is on the stomach and duodenum that the inflammation is to be met with; it occupies the small intestines, if purgatives have been used; these and the stomach remain uninjured if irritating clysters have been administered, while the large bowels are in a state of inflammation, which is very like that produced by the action of the sulphuric acid or a violent dysentery. In the destructive apoplexies which destroy patients before the first succours can be offered, we find the intestinal canal in its ordinary condition. Thus inflammation shows itself wherever



irritants are applied; there is no inflammation if these have not been resorted to.

This being determined, I have established the varieties of *meningeal* and *cerebral* apoplexies. The absence of effusions or their differences have served me to distinguish the former, although I have not yet ascertained the symptoms which correspond to them in the course of the disease.

It is not the same relative to cerebral apoplexies the most important to distinguish correctly, since they are more frequent and more severe. The diversities of paralyzes have furnished us with positive foundations for their diagnosis, and we have seen, according as the apoplexy offers in its course a simple or a double hemiplegia, we meet with cerebral disorganization of one or both lobes at the same time.

Finally it may happen that all the limbs may be struck by a single attack of apoplexy, and in these cases, fortunately rare, and almost always desperate, it is not in the substance of the lobes that we find the effusion, but in the centre of the tuber annulare, or pons varolii. Seven years' practice in the Hôtel Dieu and the Hospital of Pity, and seven years' researches in the amphitheatre of the hospitals on the dead body and on living animals, have confirmed the division of apoplexies now submitted to the judgment of the profession.

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#### ART. VII. *On Baths and Mineral Waters.*

By JOHN BELL, M. D.

(Continued from No. 17.)

HAVING in the last number of this Journal gone over all the preliminary considerations to be attended to in the use of mineral waters in general, and concluded by a division of those of Europe into four different heads, agreeable

to their chemical composition and temperature, I propose, on the present occasion, to notice, with suitable brevity, the medicinal powers of the more celebrated ones, after having previously given the most authentic analysis of their mineral, saline, and gaseous ingredients.

### *Bath.*

The mineral springs of Great Britain, and especially England, will first engage our attention. That country, considering its limited extent, has a great number and variety of these bounties of nature. First in precedence is Bath, as well on account of the elevated temperature of its waters, as of its antiquity,\* the magnificence of its public and private edifices, and the wealth and fashion which are attracted to it during the bathing season. The climate, also, of this section of country is the most genial in the island, and affords to the invalid an important auxiliary in the cure of disease.

The city of Bath is situated on the banks of the Avon, in the county of Somerset, one hundred and five miles from London, and twelve miles from Bristol. In architectural display, it presents a view almost unrivaled in England, and to which the intelligent native will with pride refer the stranger, in preference to the great capital itself. A detail of the arrangement and beauties of its crescent, circus, and other noted streets, or of its squares or churches and public edifices generally, would ill comport with my present design, however gratifying it might be to the traveller and man of taste.

The pump room is a handsome building, erected in 1797, having at one end a music gallery, and at the other a marble statue of the celebrated Nash. In the centre of the south side, opposite the entrance, is a marble vase, from which the water is handed to the company. Being a public promenade, this room is open to all persons decently dressed.

\* The Romans had warm and vapour baths in this city

but they who drink the waters are expected to pay about five dollars a month, besides a gratuity to the pumper. During the season, an excellent band of music performs every morning.

The public baths are four in number; viz. the King's Bath and Queen's Bath, which are connected with each other, and the Hot Bath and Cross Bath. The private baths are those belonging to the corporation in State Street, built in 1788, with dry pumps, sudatories, and every other accommodation, and the neat and convenient ones called the Duke of Kingston's, or the Abbey Baths, belonging to Earl Manners.

Of the charitable institutions at Bath, the General Hospital claims the pre-eminence, being, as the name implies, a receptacle for all the sick poor from any part of the United Kingdom, whose complaints are of a nature to require the use of the springs.

The new assembly rooms at the east end of the circus are considered the most spacious and elegant suite of apartments for the purpose in the kingdom, and on ball nights accommodate from eight to twelve hundred persons: adjoining the ball room are rooms for cards, billiards, coffee, &c. The lower assembly rooms are also filled up in a spacious and elegant style. Sydney Garden, Vauxhall, is much resorted to, especially on the occasion of the public breakfasts and galas given there. Here, in fine, as at most other celebrated watering places, the fountain of Hygieia was not long the only object of attraction, and the giddy and the gay have contrived to surround it with the grove of Cytherea, and temples of pleasure, where luxury and extravagance too often riot uncontrolled; and song and dance drown the sighs of pain, or mimic the cry of anguish and the hobbling gait of the miserable invalid.

The temperatures of the Bath springs have been already given. Dr. Saunders tells us that the water deposits in the several baths a thin stratum of ochry sediment, the same as that which is deposited when the water remains to cool in any vessel. Along with the water as it gushes from



the various sources there is brought a large quantity of an ash coloured pyritical sand, which has been examined with great minuteness by various chemists, and is found to be composed of silicious earth, interspersed with metallic looking spots.

The chemical impregnations of the different springs at Bath vary only in degree. The latest analysis is, I believe, that by Dr. Scudamore and Mr. Garden. According to these gentlemen, the King's Bath contained in the proportion of a pint of the liquid,

Muriate of lime,	1.2 grains.
Muriate of magnesia,	1.6
Sulphate of lime,	9.5
Sulphate of soda,	.9
Oxide of iron,	.01985
Carbonic acid,	1.2 cubic inches.

Dr. Scudamore thinks that the magnesia, which he was the first to discover in these waters, is one of their most important ingredients. The King's Bath water is more strongly impregnated with magnesia than the Cross Bath, but not quite so much as the Hot Bath.

Prior to my noticing the more prominent diseases in which the Bath waters have been found serviceable, I cannot omit the monitory remark of Dr. Saunders, applicable not only to the springs in question, but to all others, especially thermal ones: "When the waters are likely to prove beneficial," says this judicious writer, "they excite, on being first taken, a pleasing glow in the stomach, to which soon succeed an increase of appetite and spirits, and a rapid determination to the kidneys. On the other hand, when they sit heavy on the stomach, and produce sickness, and do not pass off by perspiration, their operation is unfavourable, and their further employment is not to be advised."

When we consider the very minute portion of iron contained in these waters, we must suspect that what has been said of their stimulating properties as chalybeates, ought to be referred to their exalted temperature, by which effects will be produced, and cautions demanded, similar to those

expected, without just grounds, I think, from any common dose of a chalybeate. In either view of the case, "there can be no doubt but that its (the water's) employment is hazardous, and might often do considerable mischief, in various cases of active inflammation, especially in irritable habits, where there exists a strong tendency to hectic fever, and even in the less inflammatory stage of diseased and suppurating viscera, and in general wherever a quick pulse and dry tongue indicate a degree of general fever. The cases, therefore, to which this water is peculiarly suited, are mostly of the chronic kind, and by a steady perseverance in this remedy many very obstinate disorders have given way."\*

One of the most usual and efficacious modes of employing the Bath water is by its external application, either generally, as in bathing, or topically, as in douching. This latter process is called at Bath *dry pumping*, because one part only of the body is subjected to the action of the water, while the rest is dry. Its duration is measured by the number of strokes of the pump: from fifty to one hundred are generally used at a time.

A reference to the principles laid down in my first paper on this subject, when I had occasion to speak of the effects of bathing according to the temperature of the water, as well as the cautions given by Saunders, will teach us that Bath water, in its conjoined use externally and internally, is best adapted to diseases of low action, with torpor and engorgement of parts, and when the phlogistic diathesis has subsided or been subdued, and no visceral inflammation is present. Indeed, if we are governed by our improved pathological precepts, we shall begin to question the propriety of employing the Bath water in visceral obstructions, since it is difficult to imagine obstruction in an organ independent of some degree of inflammation or congestion, when the stimulant effects of this thermal drink would be inju-

\* Saunders's Treatise on the Chemical History and Medical Powers of Mineral Waters, &c. p. 184.

rious. This sentiment of Scudamore, more fully developed in his work on Gout, is in perfect conformity with the views of visceral obstruction entertained by the most enlightened pathologists of the French and Italian schools. In farther confirmation of the correctness of this opinion, we have the testimony of Drs. Gibbs and Parry, who unite with Dr. Scudamore in declaring, that in gout, where the fit is about to come on, or during the paroxysm, or in the interval where an inflammatory disposition or derangement of the hepatic apparatus exists, the use of the Bath water is not simply inefficacious, but absolutely hurtful. If such be the language of experience in this disease, with what show of propriety can we recommend and lavish cardiacs, cordials, and the dread host of stimuli in similar circumstances? As a general rule, Dr. S. thinks that a gouty patient should be restricted in the use of the water, or perhaps altogether forbidden its use, "unless debility of the stomach or nervous system, unattended by gout, prevail; or unless that kind of chronic gout is happening, in which it is to be desired that a fit, as it is called, should be excited, for the relief of the constitution, which, under such circumstances, is oppressed with all the distressing symptoms of hypochondriasis. Cases of this description must be attentively studied, as to the question of visceral obstruction." It is more especially in the chronic forms of gout, where there is great deficiency of nervous energy in the muscles, joined with languid circulation in the extremities, and stiffness with aching pains in the joints upon every motion, that we are to expect most advantage from the Bath waters, internally and externally. The dry pumping should be cautiously employed, and never when there is any tendency to inflammatory action in the parts.

What has just been advanced may be applied usefully to all those abdominal affections depending on deranged action and function of the abdominal viscera. Bath water should not be employed in complaints of the above nature, while any absolute obstruction is actually existing. "As a tonic remedy after the sufficient employment of



regular medicines, it is entitled to our best confidence. It is always to be considered in diseases of obstruction, that if we stimulate the organs of circulation prematurely, it is more probable that we shall excite diseased than healthy action. It must be our object to restore proper function, before we can, with any fair prospect of advantage, excite the unhealthy organ or organs to a greater degree of action—if action alone can be considered.”\*

It were sincerely to be wished that practitioners would seriously weigh the value of these opinions, and look upon them as entitled to almost all the authority of aphorisms. They will learn, that they may starve an organ or apparatus into healthy function, whereas every variety or grade of stimulation, general as well as local, will too frequently aggravate the malady.

In rheumatism, nearly the same reasoning is applicable as in gout; but as there is less complication in the former than in the latter disease, we may regard the baths as highly useful in the chronic form of rheumatism, where there is little tendency to febrile irritation. In even the more equivocal cases, the stimulating effects of the hot bath will be compensated for by its producing diaphoresis, and thereby relieving the pain and irritation. The following is strong testimony in favour of the Bath waters in this disease. “A great number of the patients that resort to Bath, especially those that are admitted into the Hospital, are affected with rheumatism in all its stages, and it appears, from the most respectable testimony, that a large proportion of them receive a permanent cure.”

In hypochondriasis, marked by atony of the general system and languid action of the stomach and intestinal canal, and in dyspepsia, resulting from studious and sedentary habits, in whom spasm and pain, the consequence, as far as can be judged, of a neuralgia of these parts, are troublesome symptoms, the Bath water may be drunk with decided

\* Scudamore on the Mineral Waters of Buxton, Matlock, Tunbridge Wells, Harrogate, Bath, &c. p. 148.

benefit. Its efficacy in these cases, as also in cutaneous complaints, is rather hastily, I think, attributed by Saunders to its mere temperature.

In chlorosis, these springs must be resorted to with all the precautions already inculcated, when speaking of visceral obstructions in general. There are many cases on record of permanent freedom from this disease, where no organic alteration existed, and but little irritability, by conjoining the internal use of the water with alternate immersion and dry pumping over the lumbar region, and occasionally over the parts more immediately interested.

Better acquainted than formerly with the supporting causes of paralytic diseases, we shall be cautious how we prescribe for them the Bath, or any other stimulating waters.

As regards the quantity to be drunk, and the periods and duration of bathing, Dr. Falconer advises that the invalid should not exceed a pint and a half or two pints daily; and in chlorosis with an irritable habit, not more than a pint should be employed. The morning is the time constantly preferred for taking the waters, and the allowance for the day is divided into three portions, whereof two are to be drunk at intervals before breakfast, and one afterwards, either at noon or evening, according to the state of the stomach, and the quantity of food previously taken.

The period for using the bath is generally in the morning—deviations from the rule to be tolerated under certain circumstances, depending on the state of the patient, and the judgment of the physician. The warm or hot bathing is commonly practised two or three times a week, and the duration of the immersion varies from ten minutes to half an hour. The coming on of a headach or vertigo in persons of a full habit renders a cautious use of it necessary, and when lassitude or faintness supervene, the patient should leave the bath.

I have been somewhat minute in this account of the mode of administration and effects of the Bath water, from its great resemblance of properties to our own hot springs

in Virginia, where unquestionably the same forms of disease may be as successfully treated as at the English springs.

*Bristol-Hot Well.*

This is one among many names conferred at first through ignorance or whim, adopted promptly by the vulgar, and retained from a belief of necessity or convenience by the learned and intelligent; though to the uninformed on the subject it cannot but convey erroneous impressions. This spring, misnamed Hot Well, is barely of a tepid temperature, being only seventy-four degrees of Fahrenheit.

Of the wealth, commerce, and importance of Bristol, and its situation on seven hills, and *resemblance in other respects to ancient Rome*,\* I am precluded from saying any thing in this place. The spring now in question is one mile from Bristol, in the village of Clifton, Gloucestershire, the romantic scenery of which, crowning, as it does, the northern summit of the cliffs, between which the river Avon gently winds, has often afforded pleasing employment both to the pencil and the pen.

The Hot Well spring is a very fine, clear, tepid water, so copious as to discharge about forty gallons in a minute. When fresh drawn, it is inodorous, perfectly limpid and sparkling, and sends forth numerous air bubbles when poured into a glass. It is very agreeable to the palate, but without having any very decided taste, at least none that can be well distinguished by a common observer.

As a matter of curiosity and its having led to a refinement of practice, I may mention here the circumstance of the Hot Well, though considerably higher than the river, being affected by a springtide of the latter, so as to become turbid at this time.

We shall not, perhaps, have a very high idea of the strength of mineral impregnation in the water, when told

\* "It is seated on seven hills, and in other respects resembles ancient Rome." *Leigh's New Picture of England and Wales.*



that it is used largely as a common beverage at the table, and for all domestic purposes ; and that, from its excellent quality of keeping untainted for a great length of time in hot climates, it forms a most valuable water for long voyages.

Agreeable to the analysis of Dr. Carrick, the Bristol water has in the wine gallon, of

Carbonic acid gas, 30 cubic inches.

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Carbonate of lime,	13.5 grains.
Sulphate of lime,	11.75
Sulphate of soda,	11.25
Muriate of soda,	4.
Muriate of magnesia,	7.25

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Solid contents, 47.75

The diseases for which Bristol Hot Well has been thought so beneficial, are various and of opposite natures ; such as the dyspepsia of those who have long resided in hot climates, bilious diarrhœa, and dysentery : and in diabetes it has acquired celebrity. Dr. Saunders very plausibly attributes its virtues, in these cases, to the purity of the water, assisted by a higher temperature than usually prevails in natural springs : and if we might be allowed to use the phraseology of our Italian brethren, we should say that it acts in virtue of its mild counter-stimulant properties, whereby it is adapted to various affections which would be aggravated by the Bath water. Its highest reputation has arisen, however, from its reputed efficacy in the cure of pulmonary consumption : a reputation the most equivocal and difficult to be tested, and withal so vague as to permit us merely to presume that the premonitory symptoms of the disease may have been removed, and, perhaps, the more harassing accompaniments alleviated by this water.

The use of the spring is entirely as a drink, and during a period varying according to the disorder.

Clifton has an elegant assembly room, and numerous hotels : strangers speak highly of the appearance of the new

crescent. But the vicinity of Bristol gives the visiter an ample choice of accommodations. This city is one hundred and seventeen miles from London, and twelve from Bath.

### *Buxton.*

Buxton is a small town in Derbyshire, distant from London one hundred and fifty-nine miles : it derives all its importance from its warm springs, which rise, nine in number, near the source of the river Wye, through many small fissures in a hard, calcareous freestone. The water is conducted from the springhead by an artificial sandstone channel, into a large marble basin, open to the air in front, and secured from intrusion by an iron gate. On emerging from the earth its temperature is eighty-two degrees—in the basin seventy-seven degrees. It is probable, from some remains of antiquities here, that the Romans were acquainted with these springs, which have enjoyed a reputation for the cure of various diseases, during a longer period and with less interruption than almost any mineral water in the kingdom.

The Buxton water in its sensible properties cannot be distinguished from common spring water heated to the same temperature. It is perfectly clear, colourless, inodorous, and tasteless, and does not become turbid by being exposed to the air for any length of time ; nor does it leave any deposit or form any incrustation on the pipes or stone channels through which it flows in its course to the several baths. It neither affects litmus nor turmeric paper. The principal peculiarity in the appearance of the spring is a very large quantity of permanently elastic vapour, which rises along with the water through the crevices in the floor of the bath, forming clusters of various dimensions, that pass through the water without mixing with it, and break as soon as they reach the surface. Dr. Pearson discovered this to be azotic gas, mixed with a small portion of atmospheric air. The analysis, by Dr. Scudamore, of one gallon of the water, gave the following :

Carbonic acid,	1.50 cubic inches.
Azote,	4.64
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Muriate of magnesia,	.58 grains.
Muriate of soda,	2.40
Sulphate of lime,	.60
Carbonate of lime,	10.40
Extractive matter and vege- } table fibres,	.50
Loss,	.52
<hr/>	
15.00	

Buxton has acquired more celebrity by its baths than the internal use of the water; the medicinal action of which Scudamore thinks "must be referred to its purity, its temperature, and its gaseous impregnation with azote."

The Buxton bath is become almost a technical term in England for any bath heated to the highest degree that is compatible with giving some sensation of cold, when the body is first plunged into it: the persons most relieved by the external use of this water are those in whom a loss of appetite, and sometimes even of perfect sensation, has come on in particular limbs, owing to long or violent inflammation, or external injury, when the first increase of action is past. Thus, the chronic rheumatism in all its forms, succeeding to the acute, and where the inflammation has been chiefly seated in moving parts, is often wonderfully relieved by this bath; and the healthy actions are soon so far restored as to enable the patient to use the more powerful remedy of sea bathing, or the common cold bath. On the other hand, the loss of action produced by true paralysis will seldom admit of much relief by Buxton bath, but requires the more direct stimulus of heat, where we have reason to believe all undue determination to the investing membranes is removed.

"Excepting where much constitutional debility is present, the patient should bathe before breakfast, and that by *plunging* in. The stay, at first, should not exceed one or two minutes; and if a pleasant reaction, or universal



warmth succeed, the bath agrees, and *vice versa*. Dr. Scudamore is convinced that the good effects of this bath would be greatly enhanced by friction, or shampooing, put in force immediately after leaving it."

At Buxton are constructed cold, warm, and vapour baths, with every degree of convenience, except in ventilation and dressing apartments.

As respects the internal use of Buxton water, we are directed to avoid it in all cases of high action, more particularly where there is a determination to the lungs: though from what cause it should be thought to exert a stimulant action we cannot learn, either by a reference to its chemical contents or its temperature: in both of which it would rather seem to be a counter-stimulant.\* The diseases to which it is thought best adapted are indeed of that equivocal description, that it is difficult to class them under a particular head. They seem, however, to be most dependent on a slow or chronic inflammation, accompanied with symptoms of nervous irritation, such as chronic gout and rheumatism, calculus, derangement of the stomach and intestinal canal, from previous excessive stimulation by intemperate living. In the first of these affections, Scudamore speaks highly of its efficacy, and recommends the Buxton, in preference to the Bath water. He cites, moreover, cases of chronic gout proceeding from repeated acute attacks, and where great local changes of structure have supervened, with rheumatic complications; all of which have been entirely relieved by the use of the Buxton water, chiefly as a bath, and persevered in for several weeks. One patient said he derived no sensible benefit before the fifteenth bath. When the atony of the stomach is not very great, the protracted use of the water internally will be found serviceable in many cases. "A judicious use of this simple remedy, will often relieve the distressing symptoms of heartburn, flatulency, and sickness, and if persevered in, will increase the appetite, render the secretions more regular, and im-

\* For the specific meaning attached to this word, see a former number of this Journal.

prove the general health and spirits, which are so intimately connected with the state of the digestive organs." I would wish all dram drinkers, whether those who sip cordials, or drink bitters or brandy, to attend to this method of relieving flatulency and gasiric uneasiness, and to try on themselves, in such cases, the effect of a tumblerful of warm water, with a few grains of magnesia and common salt.

The water of Buxton appears to produce varied effects on the bowels. Not unfrequently spontaneous diarrhœa is the consequence of its use for some days, and this is always salutary; but it is more common, especially in habits where the action of the bowels is materially sluggish, for costiveness to come on during a course of the waters, which must be removed by aperient remedies.

The conjoint use of the water, internally and by bath, has been found to afford great relief in pains of the kidneys and bladder consequent on calculus.

It is considered a full course to take two glasses of about a third of a pint each, before breakfast, interposing between the two a little gentle exercise, and to repeat the same quantity again between breakfast and dinner. It is seldom taken medicinally in the evening. Allowances must also be made for the circumstance of the water being used at table, and for all culinary and domestic purposes which its hardness will admit of.

### *Cheltenham.*

This town, ninety-five miles from London, is very pleasantly situated, being open to the vale on the south and west, and on the north-east sheltered by the Cotteswold hills. The *spring*, or *spa*, as it is called by way of distinction, was first noticed to possess medicinal properties in the year 1716; and as has usually happened with similar places, the discovery was the result of accident.

The well walk is an elegant graveled promenade, about six hundred feet in length, and two hundred feet in breadth, bordered on each side by a quickset hedge. There are hot

baths, numerous boarding houses, several circulating libraries, and many excellent hotels.

Cheltenham water, when fresh drawn, appears tolerably clear, but not perfectly transparent. It becomes more turbid by standing, and separates air bubbles in a small quantity. It gives out a slight, but very distinguishable sulphureous odour, which is more perceptible on the approach of rain. To the taste it shows no briskness or pungency, but is brackish, rather bitter, and chalybeate. The temperature is constantly from fifty-three to fifty-five degrees.

From the analysis of six different springs, we learn that the solid or saline contents vary in each: the quantity to the pint of water being from thirty-four to eighty grains, and of gaseous contents, four to twenty-five cubic inches. The proportion of contents in the strong sulphuretted saline water, is, to the pint,

Muriate of soda,	35.0 grains.
Sulphate of soda,	23.5
Sulphate of magnesia,	5.0
Sulphate of lime,	1.2
Oxide,	.3
	<hr/>
	65.0

*Gaseous contents.*

Sulphuretted hydrogen,	2.5 cubic inches.
Carbonic acid,	1.5
	<hr/>
	4.0

The pure saline spring has 50 grains of muriate of soda, 11 of sulphate of magnesia, and 15 sulphate of soda, with 4.5 of sulphate of lime, making, in all, 80.5 grains to the pint. Nearly similar properties prevail in the *strong chalybeate* saline water, with the addition of carbonates of soda and iron 1.5 grains, while in the sulphate and chalybeate magnesia water the proportions are changed, so that the salt most abounding is the sulphate of magnesia, in the propor-



tion of 36.5 grains to the pint of fluid. The oxide of iron is but 0.5 of a grain. A pint of the strong chalybeate saline spring yields about 2.5 cubic inches of carbonic acid.

The first and immediate effects from drinking these waters are some drowsiness, and occasionally a headach, which soon, however, go off spontaneously, even previous to the bowels being operated on. A moderate dose, though it act promptly and decisively on the bowels, does not produce griping, or leave languor or faintness behind.

Dr. Scudamore thinks, that, as a general rule, a mercurial purgative should precede the use of the water, which last may do evil by acting upon the exhalent vessels of the alimentary canal, so as to produce only fluid discharge, and actually leave behind the more solid and obstructing matter.

A variety of chronic diseases are either entirely cured, or much relieved, by the Cheltenham water; especially chronic obstruction of the liver, and of the other chylopoetic viscera, evidenced by a slow fever, torpid or irregular action of the bowels, and a defective secretion of bile. "Every practitioner must have met with cases of diseased liver, accompanied with such an impaired state of constitution that any active employment of mercury would be an unwise, if not a hazardous treatment." In such circumstances, "a better expedient can hardly be adopted than a course of Cheltenham saline water, in conjunction with a mild mercurial alterative."

Like most saline substances, a dose of this water, too small to operate directly upon the bowels, will be determined to the kidneys, and increase the secretion of urine; of course, is well adapted to dropsy.

In scrofulous affections and diseases of the skin, especially scorbutic eruptions, a persevering use of these waters will often be attended with happy results. The gouty patient, observes Scudamore, may drink the pure saline waters with almost certain prospect of advantage.

Half a pint of water is sufficient for a single dose, and this, repeated three or four times during the day, at proper

intervals, is generally enough to produce the desired effect on the bowels.

### *Epsom.*

This place, at the short distance of fifteen miles from London, has of late years acquired more celebrity by its races than its mineral waters, though we are not hence to infer that the latter are undeserving of notice. The salt obtained by evaporation from the water was long known all over Europe, as a peculiar saline substance called Epsom salt, or bitter purging salt; it is now to chemists and physicians the sulphate of magnesia, which is contained in the water in the proportion of three parts to a hundred.

To produce the full purgative effect, the water must be drunk in the quantity of two or three pints in a short period of time. It operates mildly and efficaciously in this dose; in smaller ones it determines to the kidneys.

The diseases in which the Epsom water is recommended are of the same nature as those in which the Sedlitz is prescribed, and shall be mentioned when we come to treat of this latter.

### *Hartfell Water.*

The Hartfell Spa issues from the base of a mountain of the same name, in the county of Dumfries, (Scotland,) five miles from Moffat.

This water is an active chalybeate, and has a strong astringent and inky taste. Dr. Garnet makes a wine gallon of it to contain,

Sulphate of iron,	84 grains.
Sulphate of alumen	12
Oxide of iron,	15

The water is remarked to be always strongest after rain. Its first effects, when drunk, are giddiness and sickness; especially when a larger dose has been taken than the stomach can well bear: its operation on the bowels is uncertain;

sometimes it produces griping, and not unfrequently a diarrhœa follows the first use of it; but this is not the general consequence, for it much oftener occasions costiveness, and this may be said to be its more natural and constant effect.

“This water,” as Dr. Horseburgh observes, “has been found of great service in disorders of the stomach and bowels, bloody flux, bloody urine, immoderate flow of the menses, fluor albus, gleet, &c.” It must be confessed that this is rather vague praise, and destitute of that specification which we require when the virtues of a medicinal spring are to be detailed to us. We may, however, from these and other similar remarks, and after a review of our pathological doctrines of the diseases in which iron has been prescribed with success, doubt strongly the alleged tonic or stimulant powers of this metal, and feel some bias to the classification of the Italian school, in which it is placed along with the saline preparations in general, and among the counter-stimulants.

The external use of the water, conjoined with its internal, has been highly lauded in cases of old and languid ulcers with great laxity of texture, and profuse and ill conditioned discharge.

Few patients will bear more than an English pint in the day, though this quantity may be continued for a length of time.

#### *Harrogate.*

This is an extensive village in Yorkshire, eighteen miles from York, and two hundred and ten from London, and has been long celebrated for its mineral springs. It is divided into High Harrogate and Low Harrogate: at the former are two chalybeate springs; at the latter are the two sulphureous ones, and a third both sulphureous and chalybeate. The old sulphur well is the only one now resorted to for drinking. The water, when first drawn, appears perfectly clear and transparent; it sends forth a few air bubbles, but not in remarkable quantity: it has a strong sulphureous



and fetid smell, and a taste, bitter, nauseous, and strongly saline.

The last analysis, undertaken by Dr. Scudamore and Mr. Garden, makes the chemical ingredients in a gallon of this water as follows :

*Gaseous contents.*

Sulphuretted hydrogen,	13.716 cubic inches.
Carbonic acid,	9.529
Azote and carbonated hydrogen,	5.800
	<hr/>
	29.045

*Solid contents.*

Muriate of soda,	760 grains.
Muriate of lime,	32
Muriate of magnesia,	28
Sulphate of lime,	8
Carbonate of lime,	12
Carbonate of magnesia,	3
Loss,	5
	<hr/>
	848

Some preparatory treatment is generally necessary previous to using the Harrogate waters ; such as the loss of a few ounces of blood from the plethoric, either from the arm or by cupping ; after which a mercurial cathartic should be administered, to clear the *primæ viæ*. When there are indications of a sluggish circulation in the abdominal organs, or congestions in the portal circle, an alterative course, as the blue pill and aloetics every second night, should be enjoined. In general this water is not sufficiently aperient of itself, and therefore requires an auxiliary. The patient should rise early, and drink the waters fresh from the spring. The quantity recommended is three to four glasses, each containing half a pint, at moderate intervals. Dr. Garnet very judiciously recommends, as a corrective to the nauseous taste of the water, a small quantity of sea biscuit, or

coarse bread, which will speedily remove the unpleasant flavour, without cloying the stomach. A full course of the waters requires a period of from four to six weeks.

Like all other saline waters, that of Harrogate is used in a number of diseases of the alimentary canal, and derangements of the hepatic apparatus, often the effect as well as cause of the former. Dr. Scudamore thinks that this water is every year gaining reputation in hepatic diseases and intestinal torpor, more especially when conjoined with the blue pill and *extr. colog. comp.* It is not difficult for us to make the application of these facts to our home practice in this kind of disorders.

“Of cutaneous diseases, it is in the order squamæ of Willan, and the species *lepra et psoriasis*, that Harrogate water promises the most benefit. Dr. Willan gives his valuable testimony to its efficacy, when he remarks, ‘I have seen some very obstinate cases of lepra, alphos, and psoriasis, completely cured by the proper use of the waters of Harrogate.’”\*

These complaints receive material benefit from the use of the warm bath, which accordingly makes part of the plan of cure; and during its use, very moderate doses of the water, warmed, and repeated at proper intervals, will materially assist in keeping up the full perspiration, which is promoted by the bathing, and ought, perhaps, to be continued by confining the patient in bed, and wrapped up in flannel after immersion. This remedy is useful in the sequelæ of gout and rheumatism.

The round worm and ascarides have been expelled by the free use of the Harrogate water, so as that it may purge: in the latter disease injections of the water have been very properly recommended.

The effects of this spring deserve the more attention from the American physician, on account of the resemblance in composition and general properties between it and the White Sulphur Spring, in Virginia.

\* Scudamore.

*Holywell, or Malvern Waters.*

The two villages of Great and Little Malvern, in the county of Worcester, are three miles apart. The former, as the most noted and the most resorted to, is the only one meriting notice on this occasion. It is eight miles from Worcester and one hundred and ten from London. It is a town of great antiquity, and, independently of its ecclesiastical history, holds a distinguished rank amongst the places of fashionable resort. Great Malvern, though nearly two miles from the Holywell, is the principal residence of the visitors, for whose accommodation there are sixty or seventy houses, to many of which are attached gardens and shrubberies.

The mineral impregnations in the two springs of St. Anne's Well and the Holywell, are so slight as to induce many to attribute the relief experienced by persons in different diseases, who have visited Malvern, to the purity and salubrity of its air, and the delightful walks in its vicinity, rather than to the drinking of the water. As an external application, it is highly lauded by Saunders in cases of deep seated ulcerations and caries; also, ophthalmia, all occurring in scrofulous habits; and in a variety of cutaneous disorders, followed by desquamation of the cuticle, and in those of an hepatic character, especially in persons with a hot skin and irritable temperament.

Malvern water is recommended as a drink in inflamed states of the kidneys and bladder, attended with a discharge of bloody, purulent, or fetid urine, and likewise in fistulous sores of long standing.

"The effects of this water on the bowels are not at all constant; frequently it purges briskly for a few days, but it is not uncommon for the body to be rendered costive by its use, especially, as Dr. Wall observes, with those who are unaccustomed to malt liquors. In all cases it decidedly increases the flow of urine and the general health of the patient; his appetite and spirits almost invariably improve during a course of the water, if it agrees in the first instance."\*

\* Saunders, p. 108.



*Leamington.*

This town, formerly an obscure hamlet, is now a place of fashionable resort, and is yearly becoming of more importance. The principal edifice in Leamington is the new pump room, with the baths attached to it: the latter are supplied with water from the mineral wells. I ought not to pass over in silence the Leamington Spa Charity, projected by Mr. Satchwell, a tradesman of the place, for the gratuitous relief of persons to whom the water would be beneficial. This town is two miles east of Warwick, and ninety from London. The surrounding country presents to the invalid every inducement to exercise, by the beauty and variety of its scenery. "That ancient and most noble structure, Warwick Castle; the romantic attraction of Guy's Cliff; the venerable ruins of Kenilworth Castle; Stratford upon Avon, at an accessible distance, the well known birth-place of our divine Shakespeare, may be mentioned as assurances to the visiter, that in pursuing his daily exercise he will find an ample gratification."\*

It is not necessary, in this place, to copy from Scudamore the results of the analysis of nine different springs at Leamington. The following compend, as found in the fourth number of the Medico-Chirurgical Review, of London, will suffice for the present.

"I. *Royal Pump Room*.—Saline water. This has only a small trace of iron, and, therefore, may be considered as an almost purely saline water, strongly alterative, and considerably aperient. It contains much muriate of lime. In general, the action of the water on the bowels ought to be assisted by pills taken on the preceding night.

"II. *Royal Pump Room*.—Sulphur water. This is an excellent alterative water, mildly aperient, containing very good proportions of muriates of lime and magnesia, and an active impregnation with sulphuretted hydrogen. The oxide of iron is very trifling, yet sufficient to increase the stimulant property of the water. It does not keep like the Harrogate water, but loses all its sulphuretted hydrogen

\* Scudamore.

“III. *Lord Aylesford's Springs*.—This water is considerably aperient and alterative, abounding in muriate of lime, and containing very little iron.

“IV. *Marble Bath Pump, right urn*.—Nearly resembles Harrogate waters in its impregnation with sulphuretted hydrogen, and, in its saline contents, is a stronger water than that at the Royal Pump Room. The *left urn* is a very strong chalybeate alterative.

Dr. Scudamore thinks that in all cases where the most cooling aperient waters are required, Cheltenham will deserve the preference over Leamington; and that the use of the waters of the former place should sometimes be introductory to those of the latter, as being less stimulating.

#### *Matlock.*

The mineral spring of this name ought, in natural order, to have been spoken of immediately after that of Buxton, from which it is distant only twelve miles. In sensible properties, Matlock water scarcely differs from that of common springs; its temperature is sixty-eight degrees: it is beautifully clear, and exhales no steam, except in very cold weather. From the effect of reagents, it is concluded that it contains free carbonic acid, and some muriates and sulphates, in minute proportion, whose bases are, probably, magnesia, lime, and soda.

Matlock water may be employed in all those cases in which a pure diluent is adviseable: but it is principally used as a bath, which, intermediate between Buxton and the sea, will prepare the invalid for the latter.

#### *Moffat.*

This village, in the county of Dumfries, forty-eight miles from Edinburgh, and fifty-seven from Glasgow, is resorted to for what is peculiarly called Moffat water. This is a strong sulphureous spring, about a mile and a half from the village. The water, even when first drawn, appears rather milky and bluish, with a smell precisely similar to that of Harrogate: the taste is simply saline and sulphureous,

without any bitterness. It sparkles somewhat on being poured from one glass to another.

A wine gallon of Moffat contains, according to Dr. Garnet's analysis,

Muriate of soda, 36 grains.

—  
Carbonic acid gas, 5 cubic inches.

Azotic gas, 4

Sulphuretted hydrogen, 10

—  
19

The only sensible effects produced by drinking this water is its increasing the flow of urine. Its aperient action is so slight and casual that the use of some of the common purgative medicines is almost always requisite during a course of the water. The diseases for which the Moffat spring has been, and still is, most resorted to, and for the cure of which it has been almost proverbially famous, are cutaneous eruptions of every kind. With this intention the external application of the water, warmed to a considerable temperature, is very judiciously made a large part of the plan of cure.

Scrofula, in its earlier stages, and glandular tumours, are often relieved and dispersed by the use of this water. It has also been found serviceable in ill conditioned and irritable ulcers. In addition to these, Moffat water is now employed in a number of bilious complaints, in dyspepsia, and a general deficiency of action in the alimentary canal, and also in calculous cases. The quantity usually prescribed for drink is from one to three bottles every morning, but there are many persons of a delicate stomach to whom this allowance is much too large.

### *Scarboroughh.*

This is a seaport town in Yorkshire, thirty-five miles from York and two hundred and thirty-seven from London: but its chief claims to notice are derived from its mineral springs. The principal of these are called the north or chalybeate well, and the south or saline well; which might be better



designated by the terms carbonated chalybeate, and saline chalybeate. The last is the one more particularly distinguished as Scarborough water. Its taste is strongly chalybeate, rather brisk and pungent, and at the same time saline and somewhat bitter.

“One pint of this water yields from thirty to thirty-five grains of solid residuum, of which about two-thirds are a soluble crystallizable salt, chiefly sulphate of soda. The remainder is mostly selenite, mixed with chalk and oxide of iron.”\* This, it must be acknowledged, is far from a satisfactory analysis, but I am not in possession of a better or more recent one.

The general effect of this water, even when taken in moderation, is to determine gently to the bowels rather than to the kidneys, which is the usual way for simple waters to pass off; “and this circumstance,” continues Saunders, “illustrates, in a striking manner, the great increase of activity which is given to purgative salts by large dilution, and probably, too, by the addition of the chalybeate principle.”

The diseases to which this water is deemed applicable are nearly the same as those benefited by Cheltenham water, to the account of which latter the reader is referred. Though from the Scarborough water being less strongly impregnated with mineral and saline substances, it is rather as an alterative that we must employ it, than with a view to its free operation on the bowels.

The invalid has the peculiar advantage, in visiting Scarborough, of being able to unite, when necessary, sea bathing with the internal use of the water. Morning is the usual time for both.

### *Tunbridge Wells.*

This is a general appellation given to a series of scattered villages and dwellings, within five or six miles from the town of Tunbridge, in the county of Kent, and thirty-six miles from London. The springs themselves consist principally of those called Mount Ephraim, Mount Pleasant,

\* Saunders, p. 291.

Mount Sion, and the Wells, properly so called. The air of this district is very pure and salubrious ; and the waters of the *chalybeate* kind are nearly of equal strength to those of the German Spa. During the two last reigns, Tunbridge Wells has been frequently visited by different branches of the royal family.

Tunbridge contains many chalybeate springs, all of which resemble each other very closely in chemical properties. Two of these are chiefly used, which yield each about a gallon in a minute, and, therefore, afford an abundant supply for the numerous invalids who yearly resort thither.

The source of these springs is probably at a considerable depth, for the water preserves, very constantly, the temperature of fifty degrees at all seasons, and experiences very little change from the heat of the external atmosphere.

The water losing its chalybeate properties after an exposure of some hours to the air, or when heated, proves that the iron is suspended by carbonic acid. According to Dr. Babington's analysis, a wine gallon contains five grains of solid matters, and sixteen cubic inches of different gases, while Dr. Scudamore tells us that free carbonic acid is contained in the water, together with carbonated earth, lime, combined sulphuric acid and muriatic salt, and that the ferruginous and saline ingredients are about seven grains and a half per gallon. In respect to gaseous contents, it was found to present,

Carbonic acid,	8.05 cubic inches.
Oxygen,	.50
Azote,	4.75

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13.25

The principal diseases to which the Tunbridge springs are applicable, are dyspepsia from debility of the stomach, with languor and nervousness, uterine debility, chlorosis, cutaneous complaints, especially of the scaly species, connected with weakness of the stomach, and gravel founded on unhealthy condition of the digestive organs. "Its general operation," says Dr. Mackenzie, "is to increase, in a

gradual manner, the tone of the secretory system, and, by the permanency of its tonic power, to augment the strength, nervous energy, and vigour, of all the functions of the body. It is, therefore, in those chronic diseases that arise from slow beginnings, and are attended with great laxity and debility of the solids, that this water is peculiarly indicated."

The most favourable period for the drinking of the waters of Tunbridge Wells is from May to November.

### *Mineral Waters of Germany.*

Germany, peculiarly rich in mineral productions, abounds likewise in medicinal springs, some of which have obtained a place in general history. In noticing the principal ones I shall not follow any system. Among the most celebrated are the waters of

#### *Aix la Chapelle, or Aken.*

This city was, by the Congress of Vienna, included in the Prussian dominions: it is twelve leagues west from Cologne, nine north-east from Liege, seven from Spa, and eighty from Paris. It is situated in a fertile and delightful valley, which is surrounded by mountains covered with wood, and enjoys, during the greater part of the year, a salubrious air. Its thermal waters appear to have been known to the Romans, but they owe their modern fame, and the improvements connected with them, to Charlemagne, who made Aix la Chapelle his residence, and occasionally held his levee in the bath with all his attendants.

The waters may be drunk at all seasons, and M. Reumont, the superintending physician, says that he has seen cures of serious disorders from the use of the waters of Aix in the midst of winter. The principal springs, three in number, issue from between beds of calcareous stone and micaceous freestone, and unite in a large reservoir, which is enclosed in an edifice surmounted by a dome, whence the water is distributed to the bathing houses. It is found in the different baths of various degrees of heat, from one hundred and ten to one hundred and forty-three degrees.

The analysis of Reumont and Monheim makes the in-



gredients in this water to be carbonates of soda, lime, and magnesia, muriate and sulphate of soda and silex, and the proportion of gaseous products is as follows :

Azotic gas,	51.25 cubic inches.
Carbonic acid,	28.26
Sulphuretted hydrogen,	20.49
	<hr/>
	100.00

The medical virtues of these waters have been long famed, and their administration presents the same advantages as those of the waters of Baréges and Bagnères de Luchon, in France, to be afterwards spoken of. They are adapted to all chronic cutaneous disorders, itch, herpes, tinea, blotches, pemphigus, and leprous emptions, scrofulous and arthritic affections, chronic rheumatism, dyspepsia, jaundice depending on engorgement of the liver, colica pictorum, fluor albus, melancholia, hysteria, exostosis, caries, incomplete ankylosis, stiffness, weakness and contraction of the limbs from gunshot wounds. Dr. Hufeland recommends these waters in hypochondriasis. They must be used with much caution in paralysis which results from apoplexy. There are many circumstances which would forbid their use, and in which they might be productive of serious consequences, as excessive debility, a febrile state in general, whether from gout or visceral obstructions, disposition to hemorrhage, phthisis pulmonalis in the ulcerative stage, congestions in the head and breast. They are also hurtful in scirrhus tumours and internal ulcerations.

Their use is external and internal. The water of the great spring is drunk in doses of from half a pint to a pint. Two or three pints prove purgative. Weak or emaciated persons are directed occasionally to mix with the first glass of the water, some asses' or cows' milk. If nausea and vertigo follow the use of the water, it may be drunk cold, for the first few days, and then the invalid can gradually accustom himself to its common temperature.

There are at Aix la Chapelle warm and vapour baths, and douches very well arranged. The period of the duration of the bath is, we must needs think, rather long, being

from half an hour to an hour, according to the temperament and nature of the disease.

*Spa.*

Spa, at present included in the kingdom of the United Netherlands, is a small town situated in a mountainous district, which forms part of the forest of Ardennes, and is ten leagues from Aix la Chapelle, six from Liege, and seventy-five from Paris.

The edifices and places of public amusement are on an extensive, one might almost say magnificent, scale; fitting to the character and number of persons who resort to its springs from all parts of Europe. Nature has in her donation of these waters compensated for the barrenness of the soil around Spa, which barely produces a sufficiency of food for the inhabitants.

The springs are to the number of seven, of which that called Pouhon is the principal. Deheers and Limburg inform us that after rainy weather the waters of Spa lose much of their medical properties, being then insipid to the taste, and without any of that pungency, which they at other times evince. The Pouhon spring is of the temperature of fifty degrees of Fahrenheit. The chemical analysis of a hundred pounds of this water by Bergmann gave as follows:

Crystallized carbonate of soda	154 grains.
Muriate of soda	18
Carbonate of iron,	59
Carbonate of lime,	154
Carbonate of magnesia,	363

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Solid contents,	750
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The same chemist found a hundred cubic inches of the water to contain forty-five cubic inches of carbonic acid gas.

In 1816, Dr. Jones analysed the water of Spa, with very different results. One gallon of the Pouhon spring, of two hundred and thirty-one cubic inches gave—

Carbonic acid gas	262 cubic inches
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Sulphate of soda,	0.99 grains
Muriate of soda,	1.16
Carbonate of soda,	2.25
Carbonate of lime,	9.87
Carbonate of magnesia,	1.80
Oxide of iron,	5.24
Silex,	2.26
Alumen,	0.29
Loss,	2.94
<hr/>	
Solid contents,	26.00

On comparing these very different results together, it has been asked, whether the water of Spa has undergone any change since the time of Bergmann? Whether it was really the Pouhon water that he examined? And, finally, whether Dr. Jones be not mistaken in some of his analyses.

The medical virtues of the Spa waters are very great, and their consequent reputation superior perhaps to that of any others in Europe. Their activity is proportionate to the quantity of iron and carbonic acid. The Pouhon spring is most charged with iron, and has the most powerful effects.

The waters of Spa are tonic, aperient, and cooling—they strengthen muscular action, and are efficacious in those diseases proceeding from weakness and relaxation of the tissues. Limburg recommends them in engorgement of the abdominal viscera, as of the liver, spleen, mesentery—and in jaundice, melancholia, hypochondriasis, acidity of the first passages, leucophlegmatia, and sometimes dropsy—paralysis, exhaustion, the consequence of excessive venereal indulgence, and the impotence thence resulting—colics, boborygmi, eructations, hiccoughs, vomiting depending on atony of the stomach, loss of appetite, chronic diarrhœa, exhausting sweats, hysteria, excessive flow of the menses, fluor albus, chlorosis, sterility—in some ulcers, particularly of the bladder, kidneys, and liver—in nephritis, gravel, scurvy, cachexy, hepatic herpes, itching of the skin, obstinate



intermittents, worms, old gonorrhœa—and, finally, they are useful in the convalescence from acute disease.

This list might be much abbreviated, by omitting symptoms, and hypothetical diseases; and still enough would remain to task our belief in the sanative powers of these waters, as urged by their encomiasts.

As an offset, however, to the laudatory part, we are warned against the use of the Spa waters in all inflammatory diseases, even in their forming state—in scirrhus, phthisis pulmonalis, and marasmus, kept up by internal abscesses, also in epilepsy, and apoplexy. They are of course hurtful to plethoric and irritable habits.

Milk mixed with the water is, we are assured by some, a very salutary remedy against scurvy, itch, herpes, scorbutic phthisis.

The first effects of the water are vertigo and drowsiness.

The thermal waters of Aix la Chapelle and of Chaude Fontaine, which are near Spa, are often useful or necessary before or after (as the case may be) the use of those now under notice, or they may be drunk alternately with advantage.

Famed as are these waters of Spa, they do not contain a twentieth part of the solid ingredients of the Congress spring at Saratoga, nor a ninth of the other springs in that part. The carbonic acid is in the same proportion as that of the Ballston and Saratoga springs, and of iron there is a small portion more than in these latter.

### *Pyrmont.*

This town, situated near the river Weser, four leagues from Hamelet in Westphalia, has been celebrated for many centuries on account of its mineral waters.

The principal springs are six in number, and all of the temperature of fifty degrees of Fahrenheit: the water is of a greater specific gravity than pure water.

One hundred pounds, as analysed by M. Westrumb, gave of—

Muriate of soda,	122 grains.
Muriate of magnesia,	134
Sulphate of soda,	547.
Carbonate of iron,	105.50
Carbonate of lime,	348.75
Carbonate of magnesia,	339
Resinous principles,	9
<hr/>	
Total,	2762.25

A hundred cubic inches of the water contains one hundred and eighty-seven cubic inches and a half of carbonic acid gas. From this it appears that few other mineral waters contain as many substances in solution.

The Pyrmont waters are said to be eminently tonic, and hence must be prescribed with extreme caution. In those chronic derangements of the abdominal viscera without much irritation, in hypochondriasis and chronic jaundice, they have been found useful—also in obstructed menstruation, and the complaints consequent on this cause.

Mixed with wine, this water forms a very pleasant beverage—and it is still more refreshing, in hot weather, united with strawberry syrup. It is best, as in the use of the Spa water, to begin in quantities of half a pint, which may be subsequently increased to a considerable extent.

*Seltz, or Seltzer,*  
(*Department of the Lower Rhine.*)

This town is on the Rhine, three leagues from Nuremberg, nine north-east of Strasburg, one hundred and twenty-six east of Paris. Though in the French territory the Seltz are generally spoken of as German springs.

They rise about two hundred steps from the town, in a long and narrow valley. The water is cold, clear, and pungent, and rather saline to the taste: it deposits a yellow sediment.

The analysis by Bergmann gives per pint—

Carbonate of lime,	3 grains.
Carbonate of magnesia,	5
Carbonate of soda,	4
Muriate of soda,	17.5

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Solid ingredients, 29.5

A hundred cubic inches of water contain sixty of gas.

The medical properties of the Seltz waters have been particularly extolled by Hoffmann. They are cooling, aperient, and diuretic—and are administered with success in scurvy, bilious and adynamic fevers, fluor albus, uterine hemorrhages, unconnected with organic alteration of the uterus, and in debility of the digestive apparatus. In some subjects, these waters augment considerably the secretion of urine; and have been prescribed with advantage in herpetic and other diseases of the skin.

The Seltz water “is particularly serviceable in relieving some of the symptoms, that indicate a morbid affection of the lungs; in slow hectic fever attended with frequent flushing, and profuse night sweats, and with constant cough and fetid purulent expectoration; it will often in a high degree check the violence of perspiration, diminish the discharge from the lungs, and correct its feter, and under the operation of this medicine, the patient will, for a time, be able to gain quieter nights, and more appetite. This excellent property of allaying feverish irritation, may also be applied in many anomalous cases, where a tendency to hectic fever is suspected.”\*

It has likewise received no little praise in exanthematous and miliary eruptions, in spasmodic affections and calculous diseases. “Even in gonorrhœa simple or venereal, Hoffmann asserts the advantage to be derived from this medicine.”

The Seltzer water is drunk in doses of from two to four pints. It is of course preferable at the spring; for that sent to France and Holland, and different parts of Ger-

\* Saunders, p. 232.



many, and even England, as an article of commerce, loses a part of its strength, though the bottles be closely corked and sealed.

### *Carlsbad Waters.*

Bohemia abounds in minerals and mineral springs; and among the latter few have obtained such celebrity, or are so much resorted to, as those of Carlsbad. "This name, as well as that of the Caroline waters, is attributed to their having been resorted to, and first brought into notice, by the Emperor Charles IV. in 1370, which shows that these baths have long been held in estimation. Carlsbad contains several springs, all of which resemble each other in height of temperature and chemical properties: the most important of them is the one which rises with great vehemence and in a most copious stream, intolerably hot to the touch, and boiling up with violence—and on this account it has been denominated the Prudel or furious spring."

The temperature of this fountain, as it first issues forth, is as high as one hundred and sixty-five degrees, and keeps invariably at the same point. On account of the heat and quantity of water, there is always a thick vapour seen to hover about the mouth of the spring; and from the density of the steam, and the tardiness with which it disperses, the country people foretell the approach of a storm.

An English wine pint of this water contains, according to Bergmann, along with a small quantity of iron,—

Carbonate of lime,	4.15 grains.
Sulphate of soda,	41.51
Muriate of soda,	5.33
Carbonate of soda,	11.76

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62.95

The gaseous contents have not been measured with any degree of accuracy; but probably a considerable quantity of carbonic would be found. Klaproth's analysis gives a less quantity of saline ingredients.

There is another fountain of considerable importance

called Muhlbrunn, from the circumstance of its turning a mill : its temperature is stated to be only one hundred and fourteen degrees : it differs from the Prudel, in containing more carbonic acid, more soda, and less calcareous earth.

The immediate effect of the Caroline waters taken internally, is to increase the discharge from the bowels, and in larger doses to act as a speedy and active purgative. The Mullbrunn is more certain than the other in its operation. If the stomach be foul, vomiting is not unfrequent, after first drinking the water. Determination to the head, vertigo, and drowsiness, and occasionally swelling of the feet, and other parts of the body, follow its use in some persons. In irritable habits, a cutaneous eruption is at first brought on, which, after a while, disappears by a longer use of the water.

“ In common with the other purgative chalybeates,” says Dr. Saunders, “ it is found to be eminently serviceable in dyspepsia and other derangements of the healthy action of the stomach—in obstructions of the abdominal viscera, not connected with great organic disease—and in defect or deprivation of the biliary secretion—and here probably the soda will contribute much to the general efficacy. In those disorders of the kidneys and bladder that are attended with a discharge of sabulous concretions, and a tendency to calculus, the Carlsbad waters have long been celebrated ; and their operation, like that of the other alkaline waters, is that of increasing the flow of urine, and giving an easier passage to the extraneous matter, which, when attained, is productive of so much mischief. Owing to the activity of the chalybeate ingredient, and at the same time the power which this mineral spring possesses of giving a sensible increase to all the secretions, without inducing debility, it is highly esteemed for restoring a healthy state to the uterine system in females, and thereby removing sterility. In short we may ascribe to this thermal water, the virtues that reside in several of the mineral springs which we have already noticed ; and its high temperature and abundant quantity render it admirably adapted for warm bathing, at

any degree of heat. The same precautions against its internal use in plethoric and irritable habits, in those who are subject to hæmoptysis, or liable to apoplexy, require to be observed here, as with any of the other active thermal waters; and as its power of producing serious mischief when misapplied cannot be doubted, its efficacy in removing various diseases and relieving many distressing symptoms, is equally established by long experience."

### *Teplitz Waters.*

Though these be less efficacious than the foregoing, they enjoy considerable reputation, and are highly commended by Hufeland. According to him, they make the lame walk, the deaf hear, and the dumb speak—they are in fact very serviceable in gouty and rheumatic affections. Ambrozzi makes them contain small portions of sulphate and muriate of soda, carbonate of lime, oxide of iron, and silex, carbonic acid, and resinous matter. The temperature of the Teplitz water, omitted inadvertently in the catalogue of thermal springs, is one hundred and seventeen degrees Fahrenheit.

### *Sedlitz Waters.*

Sedlitz is a village of Bohemia, in the circle of Elnbogen, nine miles from Prague, and has become famous for the mineral waters which Hoffmann made known to the world in 1721.

They are limpid, without any odour, and of a saline and bitter taste. Their temperature is fifty-four degrees of Fahrenheit. Recent analyses make five pounds to contain of

Extractive matter,	3 $\frac{3}{4}$ grains.
Carbonate of magnesia,	6 $\frac{1}{4}$
Sulphate of magnesia,	1410
Sulphate of soda,	34 $\frac{1}{2}$
Sulphate of lime,	26
Carbonate of lime,	26
Carbonic acid,	6



The Sedlitz spring contains more sulphate of magnesia than even the Epsom, and from the circumstance of the water being evaporated to procure this salt for the purposes of commerce, it obtained the name of Sedlitz salt, by which it is yet known in many parts of Europe.

As might be expected, these waters are frequently employed in all cases where mild purging is wanted, or where the age and temperament of the patient will not admit of more energetic means. They are recommended in engorgements of the abdominal viscera, and old intermittent fevers. Hoffmann considered them as highly stomachic, and more particularly advised their use in hypochondriasis and obstinate constipation. Nor are they less useful in keeping up the evacuations so advantageous after childbearing. The German physicians advise them in gout, and for the cure of all kinds of fevers.

The ordinary dose in the time of Hoffmann was half a pint, but now a pint is required for common habits; hence it would seem that the waters have lost somewhat of their purgative virtues. If raised to a sandbath heat, they operate more certainly. They are advantageously used in the worms of children.

#### *Seydchutetz, (Bohemia,)*

Is a village not far from Sedlitz. Hoffmann believed that the waters of both places originated from a common source. The Seydchutetz springs contain less carbonic acid than the other, but their medical virtues are nearly similar.

#### *Baden (Swabia).*

Baden being the German name for bath, has been applied to a great number and variety of mineral springs in Germany, so as very frequently to perplex the stranger and traveller. The ones now under consideration are a quarter of a mile from the town of Baden, near the Rhine, two leagues from Rastadt, and eight from Strasburg. They are thermal, being from one hundred and thirteen to one hundred and forty-nine degrees of Fahrenheit, and enjoy

great celebrity. From the analysis of Krapf in 1794, they would seem to contain muriate and sulphate of soda, sulphuric acid in the proportion of four grains and a half to a pound of water, muriates of magnesia and lime, and an undeterminable quantity of sulphuretted hydrogen gas.

These waters are employed internally and externally, including warm and vapour baths and douches. The muddy deposits are also used to the exterior. From the observations and researches of Krapf and Friedlander, we learn that these waters have been found efficacious against cutaneous eruptions, arthritic, rheumatic and paralytic affections, obstructions of the abdominal viscera, amenorrhœa and diseases of that class.

#### *Wisbaden*

Is a town two leagues from Mayence and seven from Frankfort. The springs are various in their composition—that one at the extremity of the town presents a singular spectacle of water unceasingly agitated as if it were boiling. These waters disengage a strong odour of sulphuretted hydrogen gas; and they deposite a great quantity of sulphur in the pipes through which they are conducted. The thermometer in the basin indicates one hundred and fifty-four degrees, Fahrenheit.

Mr. Reynard has analysed the waters of Wisbaden, and has found them to contain sulphuretted hydrogen gas, sulphur, and carbonate of lime.

These springs are celebrated throughout Germany, and are employed in all the variety of diseases for which sulphureous waters in general are thought adapted.

In the environs of Wisbaden is a cold sulphur spring, and some others yielding gaseous products.

*Hungary*, also, has its hot springs, the principal are those of Buda and Gross Warlein. The temperature of the former is one hundred and thirty-five degrees, Fahrenheit, and in the common basin it falls to one hundred degrees.

The two most noted mineral springs of Switzerland, are those of Baden and Leuk or Loeche.

*Baden*, one of the most ancient towns in Switzerland, is situated on the borders of the Limmat, four leagues from Zurich. The different thermal springs to the number of five are in a plain to the north of the town. That which is the most abundant and most noted, is called *Sainte Verenne*.

The water when fresh drawn in a glass is clear and transparent, but in the basin it has a slight opal colour. The temperature approaches to that of boiling water, and hence they are obliged to prepare the bath eight or ten hours before it can be used.

The analysis of the *Baden* waters shows them to contain a considerable quantity of sulphuretted hydrogen and carbonic acid gases. The fixed principles are sulphates of soda, magnesia and lime, carbonates of magnesia and lime, muriate of soda, and a small quantity of iron and manganese.

If we were to determine the medical properties of the *Baden* waters from the immoderate use of them by the inhabitants of the surrounding country in all the diseases with which they are seized, we should be not a little embarrassed. It appears that they are really useful in chronic disorders only, especially rheumatic pains, sciatica, articular engorgements, rickety deformities of the spinal column, &c. It is worthy of remark that the greater number of those who go to the baths of *Baden*, submit to the application of cupping glasses to the surface of the body, whilst they are in bath—a practice the benefits of which are proved by experience.

The internal is not so efficacious as the external use of these waters. The baths are particularly advantageous in cutaneous diseases: they give greater whiteness and softness to the skin and increase its healthy action.

#### *Leuk or Loeche,*

Is a small town in the *Valais* six leagues from *Sion*, and situated on the right bank of the *Rhone*, in a valley exhibiting pasturages and cultivated fields, and furrowed by tor-



rents. The glaciers extend thus far. It is even at the base of the glaciers—of mountains eternally frozen—that these thermal waters escape, by one of those contrasts so beautifully pourtrayed by Haller, in his fine poem on the Alps. What adds to the singularity of the scene is, that at the distance of some steps from one of the principal thermal springs rises one of pure cold water.

These springs have not a very strong sulphureous odour; their temperature is from one hundred and eleven to one hundred and twenty-four degrees, Fahrenheit; they have the property of gilding pieces of silver which are left in them two or three days, and this gilded tint may be preserved for several years. Like those of Baden, and the greater number of the mineral springs of Switzerland, these waters of Leuk contain sulphuretted hydrogen gas, and in greater quantity even than the famed ones of Baréges, which they are said also resemble in their fixed principles.

The reputation of the Leuk waters is justly merited. The energetic properties which they possess, and which have been confirmed by Dr. Gay, make them occasionally preferred to those of the Pyrenees. The baths are particularly well calculated to combat obstinate cutaneous diseases, and above all, some kinds of herpes, also rheumatic and arthritic pains, engorgements of the articulations, and paralysis.

The division of the baths and accessory arrangements are somewhat peculiar. Both sexes bathe together—seated either on chairs or benches ranged round the square, which is the form of the bathing apartments. Many bathers have before them a small floating table on which are the conveniences for breakfasting, or glass, handkerchief, snuff box, books and newspapers. The young Valaisan ladies ornament these tables with a kind of altar decked with Alpine flowers, to which the vapour of the thermal water imparts all their pristine freshness and beauty, even after they have been faded.

On the arrival of the invalid he is presented with a large flannel gown, with which he must cover his body, and a

tippet of the same to protect the shoulders from the cold. The period of the duration of bathing is commonly three weeks. It is customary to begin by an hour in the morning on the first day, two hours the following one, and thus augmenting it successively until the patient continues in the bath eight hours a day—four in the morning and four in the afternoon. The second week is called *high bathing* and then a stay of six to eight hours each day in the bath is thought indispensable. One may readily conceive how difficult it would be to tolerate a bath of such long duration if the persons bathing were deprived of good company and conversation. Next follows the week of *unbathing*, during which the period is diminished in the same proportion that it was previously augmented. At the expiration of the first course of bathing an appearance on the skin called sprout is observed; it consists in an eruption of different degrees of intensity. When the first course is ineffectual, a second is to be had recourse to.

The internal use of the waters is also attended with very marked effects in some chronic disorders. After all, the bright cerulean sky, the variety of picturesque situations, and the extreme purity of the air in this section of country no doubt contribute largely to those wonderful cures about which travellers so often entertain us.

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ART. VIII. *Contributions to Physiological and Pathological Anatomy.* By JOHN D. GODMAN, M. D. Lecturer on Anatomy and Physiology.

IN the "ANATOMICAL INVESTIGATIONS" recently published I have described the *fascia superficialis*, as it extends over the trunk, head, and neck, anteriorly and posteriorly, and continues on to the arms. Subsequent examinations have confirmed these dissections, and have enabled me to show, most conclusively, that the *brachial fascia*, described

as a distinct fascia, is a continuation of the great superficial fascia.

The fascia superficialis forms sheaths for all the muscles of the trunk, neck, head, and arms. It forms, in a manner analogous, the sheaths of the muscles of the neck, and passing down into the chest with the great vessels, gives the important sheath called *pericardium* to the noblest part of our muscular structure, the heart.

The fascia superficialis is a strongly *fibrous* membrane, and over the abdominal muscles is placed nearly in the middle of the cellular substance between the surface of these muscles and the integuments, having a layer of fat above and below it. This fascia is very readily perceptible in a dropsical subject, in two of which we have recently demonstrated it, as in these subjects the cellular substance above and below the fascia is fully distended with water, leaving the fascia in its integrity.\* The strength of the fascia superficialis is very great, for when freed of cellular substance, and raised continuously from over the belly up to the shoulder, we can raise the upper part of the trunk and superior extremities of a large subject from the table by this structure, as we have repeatedly shown to the class, and as the dissectors at the *Rooms* are frequently in the habit of doing.

The importance of the fascia superficialis can scarcely be comprehended without a fair statement of all that has hitherto been related on the subject. It is impossible for me, at the present moment, to describe all the physiological views I have formed in consequence of these researches, but I hope, before long, to lay before the profession a work descriptive of the whole of the relations and arrangements of these structures, systematically digested. It is now in my power to state that the *fasciæ* of the human body are *three* in number, the *superficialis*, *lata femoris*, and *interna abdominis*, all of the sheaths of the muscles, and all the processes of *fasciæ* being formed from them, with the excep-

\* Sir Astley Cooper, who first observed this fascia on the belly, may be advantageously consulted on this subject.



tion of the *temporal*, *palmar*, and *plantar* aponeuroses. The three great fasciæ are all continuous at certain points, and might, without any effort, be considered as one, though their differences of density, &c. are sufficient to justify us in viewing them separately.

The brachial fascia is a simple continuation of the superficialis, as it may be traced from the chest under the great pectoral muscle, or from the back on to the deltoid muscle. The portion from the under surface of the pectoralis major joins the part covering the deltoid, at the inner edge of the last muscle, and when the attachments are broken through at this part, the fair and uninterrupted continuity of the superficial and brachial fascia is made evident.

We then follow the fascia upwards, on the short head of the biceps, and on the outside of the arm, on the long head of the triceps, up to the edge of the acromion and glenoid cavity, as heretofore described.

This portion of fascia is external to the tendons of the muscles arising on the scapula, and inserted into the tubers at the head of the humerus. Each of these muscles, the supra and infra spinati, teres minor, major, and subscapularis, have a sheath or double covering of fascia, derived from the superficial fascia. If we split the external covering of these muscles, and cut the body of the muscle across so as to allow us to remove it from its place, leaving the inferior layer, we shall find this inferior portion running to the edge of the glenoid cavity of the scapula, and thence to the humerus, forming a layer of the capsular ligament. Thus each of these muscles forms a layer of the capsule, which, when raised, removes a part of the thickness of the capsule, and when we raise the lowest portions we open into the shoulder joint.

It has been stated that these sheaths of the muscles are formed from the fascia superficialis, which surrounds the muscles above and below. When these layers are about to expand over the joint so as to form the ligament, it is not possible to say how far the successive portions extend from the point where they first reach the joint.

The capsular ligament of the shoulder joint is tolerably equal in its thickness, but where the tendons of the scapular muscles overlay the ligament, the thickness is very much increased by their attachments. The principle on which this joint is formed from the superficial [*brachial*] fascia is entirely analogous to that of the formation of the capsular ligament of the hip joint, by the fascia lata femoris.

The fascia superficialis not only forms the sheath of the muscle, but sends the little septa through the muscle, enveloping the bundles of fibres. These septa extend from the superior to the inferior portion of the sheath. This arrangement is very beautifully evident if we raise a part of the sheath of the muscle, and pull it upwards; then we shall see the exact manner in which these little partitions pass between the muscular bundles, and modify the direction of their actions.

The observations published relative to the muscle of the *thyroid gland* have been confirmed by a great number of dissections. We have had as many as five instances in the Rooms at the same time, and I am still inclined to believe that it occurs in almost every subject. In examining several for this curious muscle, I have found it in an imperfect condition, or rather like the rudiment\* of a muscle coming off from the isthmus of the gland, and running up but a very short distance before it became very thin and indistinct. It will be recollected that I have figured the exception to the general rule, which arose from *both lobes*, and was inserted directly in the centre of the os hyoides. It most frequently rises from the *left lobe*, and ascending a little on the left of the median line of the trachea, to be inserted into the basis of the os hyoides. I shall hereafter be able to give an interesting description of all the modifications observed in this singular structure.

The high bifurcation of the axillary artery has been found

\* FIFE notes such an appearance, which he says may be mistaken for a muscle. He appears never to have seen the fully formed muscle of the thyroid gland.

this season so frequently as to incline me very strongly to believe that some modification of this arrangement occurs as often as that so usually described below the bend of the arm. In one or two instances the bifurcation took place as high as the tendon of the pectoralis minor, in others, opposite the insertion of the coraco brachialis, and in one case the bifurcation was about two inches above the condyles of the humerus. Of seven instances of high bifurcation, occurring within the month of November, of the humeral artery, in but one did the artery pass down external to the sheet of tendinous fascia, connected with the tendon of the biceps flexor cubiti. This, and my former experience, is entirely opposed to the statement of the deservedly celebrated JOHN BELL, who inferred from what he had seen, that when the artery bifurcated above the ordinary place the vessels pass to the forearm, external to the expansion attached to the biceps. We must wait, however, for a more extended experience to enable us to ascertain positively whether Mr. Bell's rule may not be the most general.

The third head of the biceps was found, during this month, (November,) in one instance, rising from the middle of the os humeri, at the inner edge of the bone, about four inches above the external condyle. It was inserted into the proper tendon of the muscle, and not into the tendinous fascia, as has been heretofore noted. This third head of the *biceps* was, as far as I know, first described by DOUGLASS in his excellent comparative myography. In the *Anatomical Investigations*, recently published, I have made mention of several instances, though at that time I had no opportunity of knowing that Douglass had observed it.

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Having received from Professor BROWN, of the Transylvania University, on his recent arrival from Paris, an account of CIVIALE's operation for the removal of stone, with the *lithonriptor*, which is used through a straight tube passed into the bladder through the urethra, I made some experiments to ascertain the practicability of introducing a *straight* instrument. For this purpose I chose the largest



sized flexible metal catheter, which, though easily straightened in the hand, cannot be bent by any degree of force that could with propriety be used on the urethra. The diameter of this tube was three-eighths of an inch. My surprise was very great to find that this instrument, perfectly straight, could be introduced without *any* difficulty, the subject being extended on its back on the table, and the legs bent so as to allow their weight to rest on the soles of the feet. By passing it almost perpendicularly, until its extremity was made to project at the bulb of the urethra, then drawing the penis up on the catheter and slightly withdrawing the instrument, and at the same time depressing the point of the penis for two inches, or a little more, the catheter passed into the bladder with ease. The same experiment was repeated on all the male subjects then in the Rooms, in which the urethra was uninjured, and has been since repeated on several others. It is not to be expected that the same ease of introduction will be allowed in the living man, as the irritability of the parts will provoke a considerable disposition to spasm in the muscles of the bulb, perineum, and neck of the bladder. Neither do I think, as a general rule, that the catheter of the largest size can be used; still the muscles may be gradually accustomed to the action of the straight catheter, or they may be relaxed and rendered quiescent by the injection of a tobacco clyster into the rectum, the introduction of a suppository of tobacco, or possibly by the use of an injection of laudanum. Whether CIVIALE's operation be immediately followed with all the advantages expected or not, we have reason to hope that the introduction of the straight catheter will doubtless be of great use in various affections of the bladder, as it is more manageable than the common curved instrument.

Where there is no deformity of the urethra produced by stricture, ulceration, or tumours within the pelvis, there is never any difficulty of introducing an instrument into the bladder, provided the operator *knows* the actual condition of the structure of the urethra. In other words, where there is no deformity, the difficulty is produced by a vague

notion of the anatomy, and an indistinct idea of certain mysterious manœuvres to be performed with the catheter. The catheter, curved in any proper degree, may be introduced, by one acquainted with the structure, in the living subject, without any very perceptible change in the position of the instrument, or movement of the penis. In saying this, we leave out of the account the difficulty produced by spasmodic disposition in the muscles connected with the urethra, because this is to be overcome by patience, or by the use of antiphlogistic or anodyne remedies. In the common introduction of the catheter, the point of the instrument is passed down to the bulb, and then the bulb is doubled against the triangular ligament, or the operator, in attempting to execute the grand movement of depressing the penis and catheter, throws the point upwards, and catching it on the ligament, renders the introduction impossible. If it be recollected that the membranous part of the urethra is the continuation of the line of the upper surface of the urethra, and in the natural condition, is always held in the same place, there is nothing necessary to be done in the introduction of the curved sound, or catheter, than to stand on the right side, and with the catheter well oiled, pass it down the penis, keeping the external part of the catheter as much as possible in a line with the trunk of the body, whether lying, sitting, or standing, inclined obliquely outwards over the anterior superior spine of the ilium. When the curved part of the catheter is passed down low in the perineum, keeping the point of the catheter gently pressed against the upper part of the urethra, we straighten the penis slightly on the instrument, and pass it onwards into the bladder without difficulty.

When the patient lies on his back, the knees should be bent, letting the weight of the limbs rest on the soles of the feet. When he is sitting he may rest his thighs on the edges of two chairs, and incline his body a little forward. If standing, it is only necessary to make the same inclination of the body, and separate the knees to a short distance, bending the thighs on the legs a little also. As to the cor-

rectness of these directions, I have nothing further to state than that I have this winter taught students who never used a catheter in their lives, to pass the instrument with ease and certainty in different subjects, in a quarter of an hour.

### *Morbid Anatomy.*

*Hernia.*—The subject of this investigation was the body of a well formed and muscular man, who had committed suicide a day or two previously. A tumour, somewhat pear shaped, and about the size of the doubled fist at the lower part, occupied the right side of the scrotum, extending up to the external abdominal ring, growing smaller in its ascent. The testicle was to be distinguished at the under and back part of the tumour; the sensation imparted by touching the tumour resembled that produced by pressing on slightly elastic dough. From the uniformity with which this sensation was produced at all parts of the tumour, the conclusion was drawn that this was a case of pure omental hernia, or epiplocele.

The integuments being removed from over the whole of the tumour, the fascia superficialis came into view, strong and well defined; covering the whole of the tumour in the scrotum, and being strongest immediately over the situation of the ring.

When the fascia superficialis was raised from the whole tumour the cremaster muscle presented, though its fibres were not distinct, except at the upper part, immediately below the ring. The cremaster was attached with considerable force to the whole of the anterior part of the true hernial sac, or peritoneal envelope; so that it would have been impossible to cut through the cremaster muscle without at the same time laying open the sac, if this tumour had been operated on during the life of the patient.

The sac being opened from about an inch below the ring to the extremity of the scrotum, the contents of the tumour were exhibited, and proved to be a great mass of the omentum, folded on itself in a singular and beautiful manner.



Towards the lower part the omentum was much altered in structure, being thickened, loaded with fat, and studded with knobs of various sizes, from that of a hazel nut to less than a pea. Nearer to the neck of the sac the structure was more natural, though denser and firmer than the ordinary character of this membrane.

The external abdominal ring was very greatly enlarged, so that all traces of its usual appearance were obliterated. The omentum, as it passed through the ring, was more than an inch in diameter, and several adhesions existed between the omentum and the surface of the sac below. The internal edge of the external ring, seen when the muscle was detached in the middle, and thrown downwards on the thigh, appeared as if rolled on itself.

Nothing peculiar was observed in the cremaster muscle within the external ring. When this muscle was removed, the fascia interna, (or fascia transversalis as it has been incorrectly called,) through which the internal abdominal ring is formed, came into view, being strongly marked, and most so immediately at the ring, though without any circumscribed thickening. It was now seen that the internal ring was almost directly behind the external one, a necessary consequence of the continual dragging of the tumour.

When the fascia interna was split through at the internal ring, the neck of the sac became fairly visible, and though covered only by the peritoneum, this membrane was so altered immediately where it had been pressed on by the ring as to appear firm and rounded, bearing considerable resemblance to an annular ligament. Above this circular portion, the peritoneum was removed, and then a part of the arch of the colon was found immediately above the neck of the sac, being firmly held in this situation by the protruded omentum.

The view was still more interesting when the abdominal muscles were divided and turned back. Then it was evident that almost the whole of the floating portion of the omentum was thrust out. The part of the bowel pulled down to the neck of the sac, was the central portion of the

great arch of the colon. The stomach was very much and forcibly displaced, being pulled down within a hand-breadth of the pylorus, so as to form a sort of constriction as if there were two pouches to the stomach. The stomach was placed diagonally across the centre of the body towards the right side, the lowest portion being between the constriction caused by the weight of the hernia, and the pylorus. This orifice presented almost directly upwards, and instead of its usual place, occupied a situation immediately below the middle of the gall bladder.

From this description it is seen that the arch of the colon, instead of crossing the centre of the body through the hypochondriac and epigastric regions, formed a semicircle crossing the lower part of the abdomen, and having the concave part of its sweep upwards, or towards the stomach.

The other appearances were natural, if we except a considerable adhesion of the rectum along the upper part of the interior strait of the pelvis, the more remarkable from the turgescence, or rather the varicose state of the veins, at this part, and no where else. The mesentery was very much charged with fat, and the large intestines were peculiarly so. The liver was studded with black spots of a small size, resembling the appearance of melanosis.

The ensiform cartilage in this subject was turned directly upwards and outwards, resembling a spur, and on a closer examination, a cushion of dense fat was found, covering the point of the cartilage. This cushion was full three-fourths of an inch in length. I have recently seen a subject with two ensiform cartilages as large as this cartilage usually is, and an inch and a half long.

The muscle of the *thyroid gland* was also found in this subject, distinctly marked, and being, as we have most frequently found, to the left of the median line of the trachea, as described by Sæmmering.

Before concluding this communication it may not be amiss to inform students of anatomy of the means we adopt in the "PHILADELPHIA ANATOMICAL ROOMS," to render wounds received in dissecting entirely harmless. Whenever the fingers or hands are cut or punctured, the part is

speedily washed with warm water and soap, and the wound sucked forcibly for a considerable time, until thoroughly freed from any matter introduced, or the suction is continued till blood flows no longer. A piece of fish glue (court) plaster is placed over the orifice, which is thus kept covered until healed. Such is the certainty with which this process averts any evil consequences that the students who adopt it feel no uneasiness relative to cuts or punctures, which in the old fashion of trusting to caustics would give rise to the greatest anxiety. Where the cuts or punctures have been so slight as to escape observation at the time they were made, and the severe irritation and inflammation have commenced, all the unpleasant symptoms have been entirely removed by this operation.

The advantages given us by this mode of treatment are very evident on comparing the present with the past season. Last season several of my class suffered very severely; the attendant on the rooms from a slight scratch on his thumb nearly lost his life, and was only saved by the supuration of his axillary glands. In my own person I three times suffered dreadfully; in one instance the whole arm swelled with immense irritation, accompanied by the most sickening sense of prostration, and several weeks elapsed before I could use my hand. In every instance the injury was slight, and had been promptly treated with caustic potash, or butter of antimony, both of which I believe, without destroying the poison, added to the irritation.

This season we have had fully as many cuts, punctures and scratches from dissecting instruments without the least inconvenience. One member of my class had slightly punctured his finger under the nail, and had applied the caustic alkali; his finger and hand were becoming stiffened, and the peculiar irritation had begun to affect his forearm. I pared the nail as closely to the wounded surface as possible, and directed him to suck it forcibly, which being done a piece of court plaster was laid over the end of the finger, and a poultice kept on during the night. The next day the tension and irritation had disappeared.



That such symptoms are not produced by the caustic I know by full experiment ; the caustic causes much irritation at the moment of its application to surfaces injured in any way except with anatomical instruments, but is not followed by any of the circumstances produced by the terrible poison of the human body.

During this winter I have myself been wounded very frequently with a variety of instruments, even having my hand lacerated by a long used and thickly coated saw. I have been punctured slightly and deeply in the sides and extremities of the fingers, while dissecting bodies in various stages of putrefaction, without being followed by the slightest injury, and which without the treatment mentioned must have produced most serious if not fatal results.

There is one instrument that I hope to see banished from the dissecting room and from the cases of dissecting instruments. This is the *hook*, which, whether single or double, is one of the most detestable poisoners that can be imagined. Being generally made with very sharp points, which are more or less ragged on their sides, it is hardly possible to use them, especially at night, without receiving punctures, and these wounds are so slight as not to be perceived until the mischief is done. They may be entirely superseded by the forceps and fingers, or if a hook be considered essential for holding up nerves or vessels let it be a blunt one. The double hook is still more dangerous than the single one, and is totally unnecessary, as it may be superseded by using common straight pins.

We frequently see in the periodical papers and in dissectors, directions given for the preservation of anatomical subjects. The materials recommended are mostly solutions of saltpetre, common salt, corrosive sublimate or pyroligneous acid. I have tried them all, and know that they all are attended with one very great disadvantage, that of destroying the edges of the knives, and unfortunately, the sublimate and pyroligneous acid, the two best preservers of the flesh, are the speediest destroyers of the knives. A better agent than any of the above, and one free from the great

inconvenience of injuring the knives, is common whiskey. We fix a pipe into a large artery, and inject the whiskey until no more can be thrown in. It does not flow out by the bowels or mouth as the solution of common salt, which may be attributed to the action of the spirit contracting the delicate extremities of the capillary vessels. In this way the whole of the muscular and cellular system is acted on, and if the skin be then sponged with *impure* pyroligneous acid the body may be kept for a great duration of time, even in warm weather; the flies may be prevented from depositing their larvæ in the cavities of the nose, mouth, &c. by pouring into these some spirit of turpentine, which will prevent them from coming to life if they have been already deposited.

The *impure pyroligneous acid* is the most excellent corrector of the bad smell of dead bodies, by merely sprinkling or sponging with it. The *pure acid* is little better than common vinegar when comparéd with the impure.

As to "disinfecting processes," such as fumigations of chlorine, &c. as far as my observations extend, they are merely the substitution of an intolerable and positively injurious vapour for a smell which at worst is merely disagreeable. Free ventilation is preferable ten times over, to disguising an unpleasant odour by the introduction of such horrible fumes.

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ART. IX. *An Experimental Inquiry into the Cause of the Action of the Heart.* By JOHN WILTBANK, A. M. of Philadelphia.

Melius, pejus, prosit, obsit, nil vident nisi quod lubent. TERENCE.

Visu carentem, magna pars veri latet. SENECA.

As in the moral world, those actions only are virtuous, which emanate from pure intentions, so in the medical that practice alone is successful which proceeds from observation

and correct theory. It is by the theory, that the practice of physic is distinguished from the arts, and sustains its justly merited rank of a profession. Deprived of the theory, it could never flourish, its cultivation would be disregarded, and it would fall from its present elevated situation to one no less degrading and useless. The importance of a correct theory is evident, as erroneous principles inevitably lead to the most pernicious consequences. It is a common practice, sanctioned even by some enlightened physicians, to devise theories and pervert facts to their support. With them facts are overlooked, and experiment and observation give place to their preconceived opinions. Hence has the advancement of the science of medicine been obstructed and retarded, its attainment rendered difficult and tedious, and the practice of physic wavering and unsettled. A person guided by a false theory, sees every thing in a similar light, his ideas all participate in the confusion, and his practice becomes useless, if not absolutely mischievous. Paris justly observes, "he who is governed by preconceived opinions may be compared to a spectator who views the surrounding objects through coloured glasses, each assuming a tinge similar to the glass employed." Nor is the injury confined to the inventor of the theory alone, it spreads as it were by contagion, and infects all within its reach with the same noxious influence. Not so, however, with one guided by a theory founded upon fact and experience. Supported by a theory of this nature, the practice of physic would continue to advance in excellence and utility, till it attained the very pinnacle of perfection. Its attainment by the student would be rendered easy, and its study and practice pleasing and interesting. By a sound theory all our ideas of morbid as well as healthy action are rendered clear and correct, and our practice accordingly regulated and established. Directed by such views, may we not attempt to correct or refute all theories invented for the gratification of the vanity alone, and substitute those founded upon fact and sound practice. Surely the exposure of a false theory merits nearly as much praise as the introduc-



tion and establishment of a new one, even though upon a solid foundation. Personal vanity too often leads men to assail established theories, and aspire at their own fame, at the expense of truth and experience. This practice is as injurious as the former, and fraught with consequences equally pernicious. It is, nevertheless, extremely common and so deeply rooted in the breasts of many, that slight hope may be entertained of a reformation. To expose these new theories, on the contrary, and to establish those useful ones, supposed to have been refuted, is of acknowledged utility; and this is the object of the present essay. Let me not, however, be thought to intimate that the theory I have attempted to refute was invented for any other than an useful purpose, for it has all the marks of a theory founded upon experiment. But it appears to me, that facts and experiments of a contrary nature, may be adduced in direct opposition to those of Le Gallois.

The discovery of the circulation of the blood, by Harvey, gave rise to almost innumerable theories and hypotheses to account for the cause of the motion of the heart. These, however, no sooner divulged than refuted, seemed to have been invented merely to gratify idle speculation, without any regard to truth or utility. They accordingly gave way, one to another, until Haller, that prodigy of mental ability, put forth his celebrated theory of *vis insita* or irritability. According to this theory the action of the heart is sustained by an innate principle which is completely independent of the whole nervous power. This theory, at once simple, beautiful and ingenious, received almost universal credence, and claimed as its supporters, the most distinguished and enlightened men, and although it had its opponents, it reigned triumphant, until the time of the ingenious Le Gallois. This physiologist inferred, from many new and highly interesting experiments, the fallacy of the firmly established theory of Haller, and placed the cause of the action of the heart in the spinal marrow. The experiments by which this theory is sup-

ported are simple and ingenious, though I think it will be acknowledged that they are very inconclusive and unsatisfactory. They are all made on one species of animals, the rabbit, whose tenacity of life is so slight as to render it very unsuitable for the performance of such experiments. The shock given to the circulation by the experiment is so great, that it is wholly unable to continue, and the heart of this tender animal is so affected as to render it inadequate to the performance of its function. Many imperfections in the experiments, and fallacies in the conclusions of this experimenter, were soon detected by Wilson Philip; and these experiments slightly varied, together with many others, were performed by him, with very different results. Much has been said since that time, in confirmation of the views and experiments of Le Gallois, but it has been by persons who have followed the path marked out by him, without attempting a single innovation. Neither have they answered the objections made by Philip, further than was done by Le Gallois himself. That Le Gallois' experiments are accurate and well devised, no one will deny; but that they are inconclusive and liable to many objections, is, I think, sufficiently evident. It was in order to settle, if possible, this interesting though much disputed question, that I took up the point as the subject of this essay. It is not my intention to follow any of those who have written on the subject in my experiments, but to confine myself to cold blooded animals. These animals, owing to their great tenacity of life, and at the same time their obtuse sensation, are peculiarly appropriate to the performance of experiments, where death is to be delayed as long as possible, and the results of the experiments observed with accuracy. It appears remarkable, that of all the experiments made on this subject, none to my knowledge, have been made on animals of cold blood, except a few by Philip on frogs. This is yet the more unaccountable, as both Le Gallois and Philip agree that these animals are much better suited than those of warm blood for such experiments. While engaged in the subject, it has been my constant desire to preserve myself as independent

of all theory and speculation as possible. Desirous of truth, I have taken up the subject, as if on a ground entirely new and unknown, and endeavouring to ascertain facts for myself, have discarded all theory and speculation. It may be proper, previous to the detail of these experiments to mention, that they have been witnessed and confirmed by Dr. J. K. Mitchell, whose experience, acknowledged dexterity, and happy talent of experimenting are fully known and appreciated.

*Experiment 1st.*—Being desirous of ascertaining the natural action of the heart, to serve as a guide to our other experiments, we performed the following. We took a snapping turtle, the *testudo serpentaria* of naturalists, and having taken off the under shell, we opened the pericardium and exposed the heart. Its action was regular, making twenty-one pulsations per minute. In a quarter of an hour, the animal would wink and move, and appeared perfectly sensible. In two hours there were twenty-three regular pulsations per minute: in six hours, the frequency and regularity of the pulsations were unaltered. The heart was observed in twenty-four hours to beat regularly twelve times in a minute; and in thirty-two hours to pulsate more slowly, though regularly. In forty-four hours, at which time it was again examined, the animal was found dead. For some time after the shell was removed, the auricle and veins continued to transmit red blood, but after a time, a transparent serous looking fluid alone passed through, and after death, the auricle was found turgid with a transparent fluid, which had the appearance and feel of serum.

Having ascertained the natural action of the heart, we proceeded to observe the effect of the destruction of the brain and medulla spinalis upon it in the following experiments.

*Experiment 2d.*—The thorax of another animal similar to the former was opened and the heart brought to view, which was observed to beat twenty-one times in a minute. In ten minutes it was decapitated, and having been allowed to remain ten minutes more, the heart was examined and



found to have undergone no alteration in its action. In an hour and a half the heart pulsated regularly eight per minute. The pericardium was now opened, and the coronary vessels were found injected. The cervical portion of the medulla spinalis was next destroyed by a large wire, after which the heart pulsated, as at the commencement of the experiment regularly, and twenty-one in a minute. The wire was then introduced into the cavity of the spine from its lower extremity, and passed up to the last cervical vertebra, without producing any alteration in the action of the heart, although very violent convulsive motions were excited throughout the body. In two hours the coronary vessels appeared to be nearly empty. The principal vessels were then tied, and the heart removed from the body. It was examined in five hours from the commencement of the experiment, and found to beat regularly eight times per minute. In twenty-four hours, when it was next examined, it pulsated feebly though regularly six times in the minute; and in thirty-six hours it had ceased to move.

*Experiment 3d.*—Another turtle was decapitated, and its under shell removed, to expose the heart: its pulsations were twenty-one in a minute. In a quarter of an hour the cervical, and about two inches of the dorsal medulla, were destroyed. The action of the heart remained unchanged: the anterior limbs lost their irritability and motion, while they both continued in the posterior. After removing, by the saw, all the cervical and about an inch of the dorsal vertebræ, the heart was observed to make twenty-two regular pulsations in a minute. The tail, and about an inch of the spine attached to it, was then removed without any alteration in the action of the heart. One-half of the remaining portion of the medulla, beginning from below, was next destroyed by a large wire: after this the posterior limbs were convulsed, and the heart observed to beat regularly twenty-one in the minute. The wire was then heated to a red heat, and passed up the canal to the same distance and with the same effect. By pushing the wire completely through the canal, the medulla spinalis, measuring five

inches, was protruded and extracted, after which the heart pulsated regularly twenty-one in the minute. The posterior limbs had now lost their irritability, and they, as well as the anterior, hung down when the animal was suspended. A wire was repeatedly heated to a red heat, and as often passed through the spinal cavity, so as to completely char its sides: still the heart pulsated as before, twenty-one in the minute. The heart, together with the viscera of the thorax and abdomen, were now extracted, after which its pulsations were regular, and twenty-six in the minute. In fifteen minutes from its removal, its pulsations were reduced to eighteen in a minute; with an intermission of one pulsation. In four hours and a half, its pulsations, which were regular, were observed to be seventeen in each minute. On the succeeding day, twenty-three hours from the commencement of the experiment, the heart was examined, and found to beat very feebly, though regularly, making in the minute eight or nine pulsations. In thirty-two hours this heart still moved, but very slowly and irregularly, pulsating only once or twice in a minute.

These experiments, I think, conclusively show that the motion of the heart is completely independent of the whole source of nervous power. It, however, has been, and may again be asserted, that although the motion of the heart is continued after the destruction of the brain and medulla spinalis, yet this action is altogether of a different nature from that by which the circulation is supported. Le Gallois asserts that this action is analogous to that observed upon exciting the voluntary muscles immediately after death, and to that noticed in the heart of a cold blooded animal when removed from the body. He moreover avers, that this action is totally incompetent to the support of the circulation. His grounds for these assertions are not very evident, and it does not appear, if it was not to conform the facts to his own theory, why he has made them. The motion is, to all appearance, perfectly similar to that observed during life in every particular: and, did we want other proofs of its fallacy, his own words, and one of his experiments, would

have great force in refuting his own opinion. The experiment alluded to, consisted in lessening the extent of the circulation by ligatures, by which the heart is enabled to support the circulation after the destruction of such a portion of the medulla spinalis as would evidently have stopped it. Now this experiment of Le Gallois' clearly proves that the action of the heart is not altered, but merely weakened in power by the destruction of the spinal marrow. But independent of all reasoning, I trust the following experiments will completely refute his assertions, and establish the fact that the action and power of the heart is unaltered and uninjured by the destruction of the whole source of nervous power.

*Experiment 4th.*—Having removed a square piece of the under shell of another turtle, we exposed the heart and observed its pulsations, which were fifteen in a minute. An aperture was made into the spinal cavity at its posterior part, and a wire passed up the canal to the articulation of the neck with the shell, and downwards a certain distance, into the tail. Sensation and motion were completely destroyed in the whole posterior part of the body. Upon applying the finger to the heart immediately after the destruction of the medulla spinalis, its action was indistinct, but in a minute or two it was observed to pulsate seventeen in the minute, with great regularity. The head was now perforated, and a wire passed through the brain and cervical vertebræ, after which the heart was found to beat twenty-five times in a minute. The tail being cut, bled freely. The arteries near the heart were very turgid and hard, and upon being opened, discharged blood and air at every pulsation of the ventricle. In two hours, the heart being examined, was found to pulsate fifteen times in a minute: and in six hours, when it was last examined, it pulsated regularly, and with some degree of force, eight times in the minute.

*Experiment 5th.*—A portion of the under shell of a turtle, similar to those used in the preceding experiments, was removed, and the heart brought to view without much loss



of blood. Upon examination it was found to beat regularly twenty-six times in the minute. A small vessel going off from the aorta, and meandering upon a thin membrane, being evacuated by pressure, was filled with blood at every contraction of the ventricle. An opening into the spinal cavity near the tail was now made, and a wire passed up to the cervical vertebræ, and down to the tail. The posterior limbs were immediately paralysed, while the anterior possessed both sensation and motion. The pulsations of the heart were regular, and twenty in a minute. The blood could be seen circulating in a large artery near the heart, and a small vessel on being cut bled freely. We now opened the head, and passed a wire from it through the cervical vertebræ, and also into the tail. The consequence was a total and universal paralysis: the heart, however, pulsated twenty-seven in a minute with the utmost regularity. An artery in the thorax, near the heart, was now divided, and the blood was discharged *per saltum* at every contraction of the ventricle. In two hours one of the posterior legs was amputated, and the main artery divided. The pulsations of this artery, attended by a discharge of blood, was found to correspond in frequency to the action of the heart. This was noticed very frequently by Dr. Mitchell and myself, and it was found that in every instance the pulsation of the artery and the discharge of blood succeeded, almost instantly, the contraction of the ventricle. A considerable quantity of blood was thus lost: the pulsations of the heart were twenty-two in a minute at regular intervals. From this its pulsations were gradually reduced, until in five hours and a half there were only nine in the minute: in ten hours it was observed to pulsate more slowly, and at irregular intervals. On the subsequent morning, eighteen hours from the time the animal was laid on the table, the heart was still, as regarded the ventricle and red muscular wings of the auricle; but the membranous portion, together with an adjacent part of the vena cava,\* continued to pulsate. In twenty-

\* This fact, which has not received as much attention as it deserves, is corroborated by some of the following experiments, and merits particular notice.

two hours the heart was removed, and the pulsating membranous portion cut off from its attachment to the ventricle. In twenty-four hours it continued to pulsate. The whole of the moving membrane was then cut out, and laid by itself in a little water. After remaining in this for a half an hour the vibrations were counted, and found to vary from eight to ten in the minute. Salt was then thrown on the membrane, and instantly its motion ceased; nor was it afterwards restored.

*Experiment 6th.*—We took off part of the inferior shell of another snapping turtle, and observed the motion of the heart without opening the pericardium: its pulsations were ascertained to be twenty-six in a minute. In a half an hour the principal vessels were tied, and the heart removed from the body. The ventricle being gorged with blood, pulsated ninety-six times in the minute; while the auricles at the same time beat forty-eight. The ventricle was now separated from the auricle, when instantly its pulsations were reduced to twelve in the minute. After a few minutes the two separated portions pulsated for a time alternately, and nineteen in the minute. In one hour the animal from which the heart was taken was set at liberty, and evinced clearly the power of locomotion, exercised volition, showed anger, turned to defend itself, and snapped at any thing held before it. It then crawled away several yards, and hid itself in the grass. In an hour and a quarter the ventricle pulsated seventeen in a minute, but the auricle had entirely ceased to move. In an hour and three-quarters the animal still moved, hissed, and snapped, but appeared to be more feeble. When laid on its back, it could not now, as before, restore itself to its natural position. The motion of the ventricle in two hours had entirely ceased. In three hours the animal evacuated its fæces, and moved along: in five hours it appeared quite dead.

*Experiment 7th.*—This experiment was commenced by sawing transversely through the vertebræ, at about the middle of the back, in such a manner as to separate completely the medulla spinalis. In performing this part of

the experiment, as may be supposed, much blood was lost. The animal was then liberated, and, although enfeebled, was able to exercise all its faculties. The incision was now extended downwards, and the body separated into two equal parts. Of these, the anterior moved and acted as when the animal was perfect: the posterior limbs and tail continued to move as if for the purpose of progression, but the efforts only threw the part on its cut surface. A wire was now thrust into the spinal cavity of both portions, by which the posterior was completely paralyzed, but the cervical medulla remaining uninjured in the other portion, the anterior limbs continued to exert muscular action. The heart, with the principal vessels attached to it, were then removed, and to ascertain whether it retained its propulsive powers, water was poured into the vena cava, which passed into and rendered turgid the auricle. By the contraction of the auricle the water was driven into the ventricle, from whence it passed with considerable velocity through the arteries. The mouths of the arteries were held upward, so that some force was requisite to expel it. The water was repeatedly poured into the veins, and at each contraction of the ventricle a portion of it was expelled from the arteries. After a few pulsations, a permanent contraction of the heart was produced, and it remained at rest in a state of systole.

It may be said, that, to make these experiments satisfactory and conclusive, they should have been repeated on some other animals. In order to do away this objection, and at the same time to satisfy my own mind, they were all repeated, with slight variations, on frogs.

*Experiment 8th.* In this experiment the medulla spinalis of a frog was divided as high up as possible. The thorax was then opened, and the heart observed to pulsate eighty times in a minute. The animal was next decapitated, and a wire passed through the vertebral canal. With the destruction of the medulla spinalis, sensation and motion instantly ceased. The heart was now examined, and found to make eighty-five regular pulsations in the minute. One of the posterior limbs, on being am-



putated, did not bleed, which was attributed to the great quantity of blood lost by decapitation. In one hour, the heart pulsed regularly twenty-three times in the minute. In an hour and a half, its pulsations were irregular, and eleven in a minute. In three hours, they had again become regular, and nine in the minute. In four hours the ventricle had ceased to beat, but the motion of the auricle, although irregular, still continued, pulsating five times in the minute. In five hours and a half its motion had entirely ceased.

*Experiment 9th.*—The thorax of another frog was opened, and the heart exposed, which was seen to pulsate regularly and forcibly, sixty-five times in the minute. The medulla spinalis was then divided near the first vertebra, and a wire passed through the spinal canal, to the articulation at the middle of the back. By this, part of the medulla was protruded and removed. The frog was now decapitated, and the result was a total paralysis. The heart continued to pulsate, and with considerable force, eighty-six times in the minute. The abdominal viscera and the thin transparent membranes were injected with blood. A large artery in the thorax was now divided, and a small quantity of blood was discharged at every contraction of the ventricle. In an hour and a half the heart was observed to pulsate with great regularity fifty-six times in the minute. Soon after this, it was removed from the body: at first, its motion seemed to have nearly ceased, but in a minute or two it was observed to pulsate forty-six in a minute. In an hour and three-quarters, the heart was again examined, and found to beat feebly and irregularly; the ventricle, indeed, seemed to have ceased to move, but the auricle and the vein still continued to pulsate alternately, the auricle twelve, and the vein twenty-four, in the minute. At every second pulsation of the vein, there was a corresponding one of the auricle. In three hours, the motion of the vein and auricle had entirely ceased.

*Experiment 10th.* Having opened the thorax of another frog, we exposed the heart, and observed, though we did not count its pulsations, which were regular and forcible.

The medulla spinalis was now destroyed ; after which, the action of the heart was regular, and apparently similar to that observed previous to the destruction of the spinal marrow, making eighty pulsations in the minute. A wire was now introduced into the brain, and that organ destroyed, after which, the pulsations of the heart were sixty-five in a minute. A large artery near the heart was now opened, and a considerable quantity of blood discharged at each pulsation of the ventricle, until all the blood seemed to have escaped. In an hour and a half, the heart made forty regular pulsations in the minute. In three hours, it pulsated slowly, and not very regularly, fourteen in the minute. In seven hours and a half, the heart was again examined, and observed to pulsate regularly, though feebly, twelve times in a minute. The posterior limbs were now occasionally seen to move, which led to the belief that the destruction of the medulla was incomplete ; a small wire was therefore moved about in the spinal canal, after which, the motion was not observed. The heart being irritated by the operation had the number of its pulsations increased to twenty-two in the minute. It was, however, soon reduced to its previous standard, and in eight hours there were only three pulsations in the minute.

*Experiment 11th.*—Another frog was laid on the table ; its thorax was opened, and its heart, which pulsated regularly fifty-four times in the minute, exposed. That moveable part of the spine situated posterior to the articulation at the middle of the back was dissected out : a wire was introduced into the spinal cavity, at the Atlas vertebra, and passed into the brain, and through the spinal canal. The action of the heart seemed weak, though regular, making fifty pulsations in the minute. Upon observing very closely a cut vessel, the blood could be seen flowing from its extremity. In an hour and a quarter, the pulsations of the heart were still weak and regular, and forty-eight in a minute. The pulsations of the ventricle were in fact so feeble, as not to be observed upon a superficial examination. The ventricle, in two hours, had entirely ceased to

beat, but the auricle and adjoining vein still continued their alternate motion, making forty-two regular pulsations in the minute. In four hours, the pulsations of the auricle and vein were regular, and forty-five in a minute; and in six hours their frequency and regularity were unaltered. In eight hours, when it was again examined, its motion had entirely ceased.

*Experiment 12th.*—Upon opening the thorax of another frog, the heart was observed to make sixty-five regular pulsations in a minute: upon destroying the medulla spinalis, which was now done, its pulsations were reduced to fifty-five in the minute. An artery in the thorax was now divided, and the blood observed to flow very freely at every contraction of the ventricle. The whole spinal column, and the head, were now completely removed from the body, and the heart observed to pulsate thirty-seven times in a minute, with great regularity. Upon minute examination, the blood could be seen flowing from the small vessels that were divided. In three-quarters of an hour, the heart pulsed regularly twenty-eight times in the minute; and in two hours, with considerable force eight in the minute. In three hours and a half the motion of the ventricle had ceased, but in the auricle and adjoining vena cava, it still continued, with nine pulsations in the minute. In five hours and a half, its action had undergone no alteration; but in eight hours, when, it was again examined, it had entirely ceased to move.

From these experiments we may, I think, be perfectly warranted in the conclusion, that contrary to the theory of Le Gallois, the action of the heart, and so much of the circulation of the blood as depends upon the action of the heart, are completely independent of the whole source of nervous power: and having gone thus far, we can, in my opinion, have no difficulty in assigning to the heart the proper cause of its action. This is, without the least shadow of doubt in my own, and I think in every ingenuous mind, the *vis insita* of Haller. It is by this theory alone that we are enabled to explain the cause of the



action and propulsive power of the heart, after the destruction of the brain and medulla spinalis; and even after the removal of the heart from the body, In vain may the adversaries of the *vis insita* attempt to explain these facts, or conform them to any other theory. The whole of the difficulties raised against the theory of Haller since his time, have been reduced by Le Gallois to four; these are, 1st, Why does the heart receive nerves? 2d. Why is it influenced by the passions? 3d. Why is it not subjected to the will? 4th. Why does the circulation continue in acephalous and decapitated animals?

Let us first observe Le Gallois' explanations of these objections. "The heart," says he, "receives nerves, and is eminently subject to the passions, because it is animated by the whole of the spinal marrow. It does not obey the will, because none of the organs which are under the influence of the whole nervous power are subject to it. In fine, the circulation continues in acephalous and decapitated animals, because the motions of the heart do not depend on the brain, or only depend on it in a secondary way."

To say nothing of the confusion left on the subject by this explanation, let me ask the explanation of one fact, the truth of which Le Gallois himself admits. Why have children been born alive without either brain or spinal marrow? While this question, as heretofore, remains unanswered, there is a death blow to the theory of Le Gallois, which it can never survive. By the late views and discoveries of Messrs. Magendie and Bell, we are enabled, in a very satisfactory manner, to explain these hitherto inexplicable difficulties. By these gentlemen, the nerves are divided into those of sensation and those of volition; and these are distinct from each other. Now the nerves of the heart are evidently nerves of sensation, and not of volition; hence their use. These nerves also serve to establish a connexion between the heart (which would otherwise be an insulated organ,) and every part of the system; thus we can account for the sympathies that exist between the heart and the other organs of the body, the influence of the pas-

sions, upon it, &c. The third and fourth, so far from objections, are more explicable on the vis insita, than on any other theory whatever. It, indeed, appears astonishing that such frivolous objections should be proposed, for the third is immediately removed when we consider that the heart owes its action to an innate principle, and the fourth, that it is completely independent of the whole source of nervous power. When, however, we oppose to these difficulties such, of a contrary nature, as has been done in the course of this essay, the objections to the vis insita all vanish, and it becomes firmly re-established, in defiance of all the efforts of its adversaries.

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ART. IX. *Thoughts on the Causes, Phenomena, and Laws of Epidemics, with suggestions for their prevention and suppression.* By N. CHAPMAN, M. D.

(Continued from No. 17.)

NEXT, I proceed to consider how far effluvium from animal putrefaction is concerned in the production of disease, and particularly of epidemics. This point, though often discussed, still divides medical opinion, and demands further investigation. The stench emitted in this process so directly appeals to our senses, that much has been ascribed to it, and even at the present moment, some of the sanitary regulations of cities are formed on the conviction of the pernicious tendencies of such exhalations. It will appear, I think, from a candid and unprejudiced examination of facts, that too much is ascribed to this source.

That such effluvia, when concentrated and abundant, do sometimes greatly disturb the alimentary canal, probably through the medium of the olfactory nerves, or by being entangled and swallowed with the saliva, inducing nausea, vomiting, and purging, with giddiness and some slight temporary febrile movement is sufficiently attested. But far-

ther than this, it will be exceedingly difficult to show that they prove mischievous—and, certain it is, no authentic evidence exists of their ever having become the main, or perhaps even the accessory cause of general disease.

As the view which I have presented of this subject is opposed by popular prejudice, sanctioned by no inconsiderable weight of professional authority, I shall take some pains to bring together the facts by which it is sustained.

The corruption of human bodies particularly, has been deemed, immemorially, most baneful in its effects, and among those who inculcated the opinion was the celebrated Bacon. It results, however, from the researches of Diemerbroeck, which seem to have been very fairly conducted, that such effluvia generally prove innoxious, and are, at least, wholly incapable of producing pestilence. That extensive sickness has followed sanguinary battles cannot be denied, and from this coincidence it was naturally assigned to the putrefaction of the slain. Lucan notices the ravages of a disease in the army of Pompey, owing to the carcasses of horses left uncovered in the field, and Marcellinus imputes to the same indiscretion, an extensive sickness in the camp of Constantine. The opinion seems, indeed, to have been early entertained, since we learn that Alexander, after the victory of Arbela, was counseled by his Mentor, Aristotle, to move on speedily to avoid the pestilential influence of the dead. But the instances to the contrary are so much more numerous, and even where disease has occurred under these circumstances, other causes so obviously existed for its production, that the hypothesis is not sustained. Consulting the history of modern warfare, all the events and incidents of which are more faithfully preserved, and entitled to greater credit, where shall we discover any warrant for it?

To this question, evidence may indeed be brought of so direct a character, and of such authenticity, that we can scarcely be longer embarrassed in the decision. It is pretty generally known that the most extensive exhumations have,



by order of government, taken place in two of the cities of France.

In the central and populous part of Paris is situated the cemetery of the *St. Innocens*, which had so long been made a depository of the dead, that though it embraced nearly two acres of ground, it was raised by strata of graves eight feet above the surrounding surface. It is computed that in the last six centuries six hundred thousand bodies had been interred within its limits. The stench became finally so offensive to the vicinage, and the alarm so great, that it was resolved to abate the nuisance, by reducing the superstructure to the level of the streets. This operation, which was carried on under the direction of M. Thouset, a distinguished physician, required two years for its completion. In his report on the subject, he tells us that the whole mass of earth removed, was impregnated and infected with the exuviae of carcasses, amounting to twenty thousand, and of other filth and ordure thrown upon its surface—and though no precautions were taken, during part of the time at least, even in the hottest weather of summer, his labours throughout were unattended by danger to the community.\* It is true, that some of the men employed suffered severely by a sort of asphyxia, suddenly induced by the escape of mephitic gases, and others by gastric distress, giddiness, nervous tremors, paleness, and debility. No instance, however, occurred of fever, either among the workmen or adjacent inhabitants.

Three years prior to this, the grave yard of St. Eloi, at Dunkirk, underwent the same process, and with results so similar that it is not necessary to give the details.

In the worst era of the French revolution, by a decree of the national convention, the graves in St. Denis, the repository of royalty, were broken open to insult the remains of their ancient sovereigns and families—and though the wretches immediately concerned in this horrible outrage, were heavily punished by sickness, from exposure to a thick, dark vapour emitted from some of the tombs, still,

\* *Journal de Physique*, for 1791, p. 253.

we do not learn that any fever was generated, or any morbid consequences whatever were extended.\* The fact related by Haguenot of several men having become instantly asphyxed by descending into a deep vault, at Montpellier, is of the same import, it being filled, as was afterwards proved by experiments, with mephitic dense vapour, killing animals let into it, and extinguishing lights. The limited danger of such exposures is a point admitted, and in support of which a stream of evidence exists from the death of the servants of Herod, who broke open the tomb of David, to the present time.

Confirmatory proof of the position I have assumed, may be derived from other sources. It is stated by the philanthropist Howard, that he heard from more than one person, during a dreadful plague in Smyrna, annoyed as the population were by the offensive odour from the number of putrefying bodies left unburied in the great cemetery of that city, they escaped disease.† By the report of the medical commissioners, recently deputed by the government of France, to investigate the nature of the yellow fever in Spain, we are informed, that on a visit to Seville, after its subsidence, they found three places of burial, containing in the aggregate about thirty thousand of those who had died of the disease. The weather was now hot, and the graves being in a clayey soil, had “cracked into wide and deep fissures, through which a fetid odour was exhaled, the result of the decomposition going on among these heaps of bodies.”

Thousands of people daily resorted thither, attracted by curiosity, or to do homage to their departed friends. Going to Cadiz, the commissioners found the churches filled with putrid emanations from the same source: no mention, however, is made of disease having resulted from these exposures.‡

Could exhalations from cadaverous sources be productive of the morbid effects alleged, surely they would be mani-

\* Howard on Lazarettos, p. 25.

† Ibid.

‡ *Precis Historique de la Maladie qui a regné dans l'Andalusie en 1800*, par J. N. Beitthé, &c.

fested in large dissecting establishments, where effluvia exist in the most concentrated state, and under every circumstance promotive of their operation. No evidence to this purport have I met with, and directly to the contrary is the common opinion, among those whose experience entitles them to decide. The celebrated Lawrance tells us, that in a constant attendance at St. Bartholomew's Hospital for more than ten years, he never saw an illness produced by the closest attention to anatomical pursuits, except such as might be expected to follow from similar confinement and application to any other employment.\* During twenty-five years that I have been connected with this school,† as a student or professor, and in which practical anatomy is prosecuted to an almost unexampled extent, sometimes even in warm weather, there has been an equal exemption from disease.

The facts hitherto mentioned apply only to the human subject. Extending, however, the inquiry, we shall find the same results in relation to animal putrefaction of every description. After much fluctuation of opinion on this point, Chisholm finally became a convert to this creed, and with his habitual industry has collected a body of evidence to sustain it, from which I shall be content to extract the most striking parts.

"Between Bristol and Hanham, on the banks of the Avon," says he, "there is a manufactory for the conversion of the flesh of dead animals into a substance resembling spermaceti, '*adipocire*,' in which process the carcasses are cut up, the muscular flesh stripped off, enclosed in large boxes, and placed in pits of water. The entrails and other offal not used, are left on the surface to putrefy. These deposits contain, at a time, the remains of three hundred horses, and an equal number of asses and dogs, from which an estimate may be formed of the volume of effluvia disengaged.

"In Gloucestershire," continues he, "there is a manu-

\* Appendix, No. 2, to Bancroft on Fever.

† University of Pennsylvania.



factory of muriate of ammonia and sulphate of soda, from bones, emitting the most nauseating fœtor, contaminating the atmosphere for a mile around—and though each of the above establishments is situated in a very populous district, and particularly the latter, which is contiguous to the village of Oldland, the health of the inhabitants has not been affected.”

To these two conspicuous instances of the innoxiousness of such effluvia, others scarcely less illustrative may be added, derived from the manufacture of candles, soap, glue, the dressing of leather, butchery, &c. all of which occupations are even deemed healthy, though attended with abominable stench. The slaughterhouses on the margin of this city particularly, are very numerous, and while at all seasons much putrid matter exists exceedingly disgusting to the senses, it exercises no influence on the salubrity of the position. We learn from the late Dr. Rush, that out of nearly one hundred victuallers who remained in the city during the yellow fever of 1793, only three died—and subsequently, I have reason to believe, they have equally escaped. No portion, indeed, of our population is more healthy, and the same has been remarked elsewhere.

Evidence of a similar character is furnished by the putrefaction of fish. Not remote from this city there are, every spring, immense masses of this sort at the different fisheries along the Delaware, particularly of sturgeons, which are an unsaleable fish, and such exist to a still greater extent on the shores of the southern rivers.

I have seen on the banks of the Potomac, at various points, cart-loads of similar putrid collections, and from the abundance of fish, and the want of a market, it has become a practice to strew them over the fields as manure, filling the whole atmosphere of the neighbouring country with an inconceivably offensive stench, without, however, any morbid consequences.\* The only fact of a militant tendency

\* An idea may be formed of the quantity of fish in the Potomac at certain seasons, when it is stated that 150,000 herrings are sometimes caught at a single haul of a net, and that on each side of the river there are numerous fisheries.

which I have met with, at all authenticated, is recorded by Forestus, of a fever having been excited by a whale thrown on the coast of Holland, which was permitted to putrefy. But, from the position where it occurred, and the nature of the disease itself, it is rendered nearly certain that it was owing to marsh miasms. Be this as it may, the cause assigned is invalidated by the consideration that under the most favourable circumstances to its operation, it has proved harmless. Gordon expressly tells us of a whale harmlessly putrefying in the hot island of Santa Cruz\*—and were such a source of disease, who among those engaged in the whale fishery, and the subsequent processes of boiling down the putrid blubber, &c. could possibly escape?

Equally incapable does human excrement appear, though so much has been ascribed to it, to produce any general disease. I have never known any other complaint, than temporary asphyxia, to be induced among those employed in the cleansing of privies, and which is imputable to the irrespirable gases disengaged. The receptacles of such ordure, in Paris, are very capacious, and from the quantity and concentration of effluvia, sometimes suddenly suspend or extinguish life. The asphyxia thus occasioned is denominated *le plomb*, concerning which we have had lately a good deal written. It is also stated that such exposures are apt to bring on a species of ophthalmia, as well as diarrhœa and dysentery, which is sufficiently probable. Yet we hear of no regular form of fever, or other wide spread disease, being traced to these emanations.

It follows, from the preceding series of facts, that animal putrefaction alone cannot be assigned as an epidemic cause, or scarcely, indeed, as a morbid agent. What is the effect of combining other matters with it, or the qualities of vegeto-animal effluvia, I am incompetent, at present, to decide. By many it is supposed that they are more virulent, productive of low and malignant fevers, of which I doubt exceedingly, though I am not prepared by any weight of

\* Chisholm's Letter to Haygarth, p. 251.

testimony to contradict it positively. There is a want of well ascertained facts on the point. The ordinary filth of cities is of this mixed nature, and though deposited in prodigious masses at the edge of our own, rotting and occasioning the foulest emanations, I am not aware that it has even proved prejudicial to the health of the neighbourhood. Coupling this fact with others of a similar kind, I should rather be led to suspect that in this compounded state, effluvia are generated of a less morbid tendency than by vegetable putrefaction simply. But, as previously intimated, I advance merely a conjecture, not being prepared with sufficient data to decide more confidently. Cleanliness, however, for reasons formerly assigned, should be observed in cities.

Continuing the inquiry, I shall now make some remarks on Contagion and Infection, as causes of epidemics. These terms being very often confounded, as well in professional usage, as common parlance, it may be proper here to endeavour to assign to them a more precise technical signification.

Derived from the Latin verb *contingo*, to touch, or more directly from the substantive *contagio*, or *contagium*, contagion is applicable only, and in this sense ought to be restricted, to those diseases which are propagated by actual contact or inoculation, as psora, syphilis, hydrophobia, the vaccine, &c.: whereas infection comes from *inficio*, to infect or imbue, a verb of the same language,\* and should be adopted to designate the diseases contracted through the medium of an atmosphere charged with morbid impregnations, such probably as typhous and scarlet fever, measles, hooping cough, &c.

The small pox, according to this definition, is both a contagious and infectious disease. As, however, before stated, these terms are used synonymously by our best medical

\* The substantive *infectio* is modern Latin, being invented by medical writers. The classical substantive from the verb *inficio* is *infectus*, used particularly by Pliny to express the process of staining or dyeing, or the impregnation of any substance with colours.



writers, and are so explained by some of the dictionaries. Yet in this respect, there is considerable laxity, and, indeed, direct opposition of meaning. By some, contagion is used to express a quality or principle, of a substantial existence—an effluvium or emanation generated by a morbid state, and capable of producing a similar disease—and infection as the act or effect. Thus, according to such use, it would be said, that a person is *infected* by the *contagion* of small pox. To this might be added, several other senses in which these terms are vaguely employed. The definition, however, which I have given, I think is to be preferred, as well from an adherence to etymology, as for the sake of perspicuity and convenience.\* It is obvious, that, at present, we have only to do with the latter class, or infectious diseases, and of which the low fevers are by far the most conspicuous. Effluvia of this nature differ in one respect essentially from ordinary miasmata, by never diffusing themselves in the mass of the atmosphere—and hence their sphere of action is circumscribed, not, probably, exceeding a few feet. They are, however, very tenacious, adhering to clothes, and particularly if these consist of cotton or wool, for months. The articles so retaining them are termed *fomites*. To wood, brick, or stone walls, adhesions take place in the same way, and even still more durably, in some instances. These effluvia never attach to ground floors—and for this reason, in camps, and other situations, in which a vast number of people are assembled, floors of earth are to be preferred. The celebrated Count Saxe made this discovery, which has since been commonly acted upon in armies, and particularly in the United States.

It may be further observed, that such effluvia operate much more actively in cold weather, and, therefore, the diseases which they originate spread wider and more rapidly under such circumstances. The typhous fever of camps, of ships, of jails, of hospitals, very generally, if it

\* The valuable paper by Professor Hosack on Contagion, may be consulted with great advantage.

do not always, appears, during the winter season. This was noticed in our revolutionary, and also in the late war. The same remark has been made in other countries, and especially by the West India writers, who tell us, that fevers dependent on this cause rarely occur in the military hospitals of those islands. Even when it breaks out on board of a crowded vessel on her passage, the moment she reaches the higher latitudes, it ceases. To this point we have the concurrent testimony of Lind, Blane, Bancroft, and many other authorities. The cause is dissipated by the volatilization of the virus, or blown away by the freedom of ventilation, or susceptibility to its action is lost. In summer, the doors and windows of houses are opened—in ships, similar perflation is practised—while in winter every aperture is closed, whereby the infection becomes accumulated, as well as concentrated, and operates more actively.

From their limited agency, such emanations can never be justly assigned as the cause of pervading epidemics. They may originate diseases, which, however, will be slow in progress, presenting cases, for a length of time, isolated and detached, each one serving as a focus, from which there is a radiated diffusion—and by this test it may be distinguished.

The history of contagion is too interesting to be passed over without some slight notice. The allegation of its existence is said to be of modern date, and was first adopted as a "pious fraud," to attain an important end. Being particularly desirous of removing the Council of Trent, a conclave which met in the sixteenth century, for the regulation of the highest concerns of religion, from a city in Germany to Bologna in Italy, the Pope of the time, after various unsuccessful attempts, commissioned his legate, Cardinal Monté, to raise the story of a contagious fever prevailing in the former place, who suborned Fracastorius, an eminent physician, to lend his authority to the support of the deception. Excepting a passage in a chapter of Galen, *De Febribus*, there is no reference to contagion in any of the professed medical writings of Greece or Rome, which have de-

scended to us. We are not, however, too hastily to conclude, as has been done of late, that the ancients were utterly ignorant of its existence. Evidence to the contrary, much relied on by some, is contained in several of their other works, and particularly in those of Aristotle, Thucydides, Diodorus, Livy, Marcellinus, Virgil, Lucretius, Ovid, Lucan, and Silius Italicus. These proofs, however, relate exclusively to low or typhous fever, for all the diseases universally confessed to be of a contagious nature, as some of the exanthemata, and syphilis, hydrophobia, &c. are of modern date.\*

What has hitherto been too often ascribed to contagion or infection, is mostly the result of other causes.

Crowding persons in filthy and ill ventilated positions is undoubtedly productive of disease, though in what manner it operates to this effect is not well understood. My own views as to the mode, stated hypothetically, and with the caution which the obscurity of the question requires, will be found in one of the preceding numbers of these essays. The poisonous effluvium thus eliminated, has recently been supposed to be produced by all the secretions and excretions of the body, accumulated and permitted to remain in a state of putrefaction, of which perspiration is the most mischievous, so much so, indeed, that it is affirmed by the late Dr. Rush, on what authority I know not, that the linen of persons even in health, has sometimes occasioned fever in those by whom it was washed. But though impurities of this sort may excite or aggravate disease, it will be as various as the sources whence they are emitted—and it is this circumstance which constitutes a well marked distinction between them and contagion or infection, the latter being always uniform in its character and effects. My meaning is, that effluvia from the recrementitious discharges, will not produce the same sort of disease, as that which the pa-

\* As this is still a moot point, I shall, in the next number of this Journal, by way of appendix, republish a most interesting paper, by my friend Dr. Yeats, of London, which embraces a series of extracts from the ancient writers on this subject.



tient may have from whom they proceed. The excretions, for example, in pleurisy, or rheumatism, or fever, not to cite other instances, however long they may remain, do not excite one of those diseases, in preference to any other description—and hence the fallacy of imputing extensive epidemics of a uniform character, to such a source. Contagion or infection here, as in all other cases, is the product of depraved vascular action, and cannot be generated in any other mode.

Cities, forts, and other places in a foul and crowded condition, have, from the earliest times, been the hot beds of pestilence. “The sword is without,” says one of the sacred writers,\* “and the pestilence and famine within: he that is in the field shall die of the sword, and he that is in the city, famine and pestilence shall devour him:” and again, “They that be in the *forts* and the caves shall die of the pestilence.”

Every classical scholar is familiar with the accurate and affecting narrative by Thucydides, of the plague of Athens, and not less so with the descriptions of the Roman historians, of the several destructive maladies of their own city, and of that of Syracuse. That the plague nearly always breaks out in the most crowded and filthy parts of cities, and chiefly among the indigent classes of people, is amply established. It was so much the case in that of London as to be entitled the *Poor's Plague*.† The same happened at Grand Cairo, Constantinople, Aleppo,‡ and at Dantzic, 1709,§ at Copenhagen, 1711,|| at Marseilles, 1720,¶ in Holstein, 1764, at Moscow, 1771.\*\* Mead indeed declares, “that it has hardly ever been known, when the disease did not first begin among the poor.”†† The wars of modern Europe furnish also conspicuous instances, among which the siege of Naples may be particularly cited, during which the venereal disease was generated. It is probable that under

\* Ezekiel, chap. vii. and xxxiii.

‡ Heberden's Observ. p. 65.

|| Gottwald. Phil. Trans.

\*\* Heberden ut supra.

† Hodge's Horimolog. p. 15, 58.

§ Webster, vol. i. p. 358.

¶ Pringle, p. 10.

†† Mead's Works, p. 165.

such circumstances, all contagious and infectious diseases originated. They must have had a beginning, and I cannot conceive of a condition more favourable to their production. Whether they have ever since been perpetuated by the preservation of the same seminal principle, or are occasionally renewed *de novo*, by similar conjunctures, is one of the most embarrassing problems in pathology, which I shall not, at present, venture fully to discuss. In relation to typhous fever particularly, though this question has of late attracted much attention, and received an able examination, we are not prepared to determine the point positively.

While, on the one hand, it is alleged, that the contagion of typhus is the result of diseased vascular action, and can be no more imitated than that of small pox by any other agency, it is, on the other, replied, that plausible as this may seem, it is contradicted by experience, since a disease, with all the essential attributes, and general physiognomy, is actually induced under circumstances where no contagion could be suspected. On this point I confess that my mind is not made up. As typhous fever is admitted to be caused by a specific contagion, it seems to follow that it ought to be specific in its nature. This is at least the case with all the rest of the specific contagions. Yet, as before remarked, we do see fevers originating from other sources, bearing the closest analogy to it. Whether these ever acquire the property of contagion, or become capable of reproducing themselves, is exceedingly doubtful in the estimation of the generality of practitioners. My own conviction is, that with the exception of the cases which arise from crowded apartments, it never happens, and even here the fact is not indisputably settled. No evidence has ever occurred to me, either in our winter or summer low fevers, to create the slightest suspicion of such a property being incident to the disease. It is contended by Bancroft, with great force of argument, that there is really a genuine typhous fever which has existed immemorially, having a specific contagion, which, under all circumstances, propagates a fever precisely like itself, and that all the simulated fevers, how-

ever induced, whether by miasmata, vegetable or animal, or by a high or low degree of temperature, or other variations of weather, or, in short, by any conceivable cause, are utterly destitute of such a property.

But plausibly as the above hypothesis is sustained, there are facts which, *prima facie*, militate against it. Thus, not to go further into the inquiry, I have seen in our own Almshouse, and in our Penitentiary, when much crowded, a low fever to arise, and apparently generated independently of any primary contagion, which has been taken as well by the permanent inhabitants as transient visitors. Every winter, in a greater or less degree, we have evidence of this in the Almshouse. The physicians, the students, the nurses, the managers, by entering the wards, at such times, have occasionally contracted the disease, and the spread of it has been wide among the patients. To this, however, it may be replied, that it was the morbid atmosphere of the place, and not contagion, which proved the cause, and which is rendered probable by the consideration that the disease is not extended by an individual removed out of the noxious sphere. Exactly the same happens in relation to yellow and even ordinary miasmatic fever. Going into an infected district in either case, and the respective diseases are acquired, which, however, are not further propagated.

On the whole, I am inclined to concur in the views of Bancroft, and with the impression of their truth, it is proper that a distinction should be instituted, and strictly observed, in the nomenclature of these two forms of fever, reserving the title *typhus* for the infectious, and appropriating *typhoid* to that which arises from other causes, in conformity to medical usage in other cases, as variolous and varioloid, syphilis and syphiloid, purulent and puruloid, &c. Whether the infection of typhus has existed *ab origine mundi*, as has been contended, I pretend not to say. But whenever generated, it was by a concurrence of circumstances which has not since taken place. To suppose the contrary, is as unphilosophical as to credit *equivocal generation* in relation to animals.



Disease is one of the curses entailed on our fallen condition, and to perpetuate the contagious and infectious classes it would seem to be ordained that we should be debarred the power of counteracting the agency by which the seminal principle is regenerated. Nature, in this respect, appears to have taken the same pains as in the preservation of her other works in the animal and vegetable kingdoms. By certain operations not to be controlled by us, the seeds are there elaborated, and such is the fact with regard to contagious and infectious diseases. Could we cure those cases, we should produce a chasm in the order of the universe, which is not permitted. Yet in conformity with the general benevolence of Providence, what we cannot entirely relieve, we are enabled to palliate, and such is the amount of our best endeavours in the contagious exanthemata, and in genuine typhus. The analogy extends further. As in animals and vegetables, so in diseases, certain classes or individuals, from time to time, having completed their destiny, become extinct, and new creations are called into being.

The diagnosis between these forms of the disease cannot be established. It may, however, be affirmed as a general rule, that the species dependent on infection, rarely, or perhaps never, prevails in warm weather. When proceeding from miasmata especially, I have also found that in character it is more of the synochus, more or less inflammatory in the beginning, and progressively becoming typhoid. It is, also, distinctly paroxysmal, and with tendencies to definite crises, and there is a predominance of bilious symptoms, indicative of greater disorder in the chylopoietic apparatus.

Deficient, or a depraved aliment, is a leading auxiliary cause. "The plague after famine" was a Greek adage. It, hence, must have been a common source of pestilence in those times—and we learn from Cæsar that it proved so at the siege of Marseilles. The plague at Delft, in 1557, is imputed, by Forestus, to the eating of mouldy grain in a season of scarcity. Ergoted rye is supposed to have produced various epidemical distempers, such as the *feu sacré*

of the French, and the morbus Hungarius described by Senertus. The sweating sickness, which prevailed more than once in England, early in the sixteenth century, seems to have been owing to a general vitiation of the wheat of those years—and it is remarked that extreme scarcity never exists in that country without being associated with similar consequences, in some degree. It is, indeed, now pretty generally confessed, that the wasting mortality which so frequently takes place among the poorer classes of society, in every section of Europe, is mainly to be traced to their miserable and penurious subsistence.

In reviewing what has been said, we are led to the conclusion, that in numerous instances epidemics are dependent on obvious causes, either acting separately, or in various states of combination. But there are others, as the influenza always, the plagues that formerly desolated Europe, the recent cholera morbus of Hindostan, and some of our own fevers, which, from the rapidity of their progress, and the ultimate universality of their prevalence, can originate in no such local or circumscribed influences, and are perhaps inexplicable on any known principle. Concerning the source of such epidemics, our intelligence is as limited and imperfect as in the primitive days of medicine. We talk, as did the "Coan sage" before us, of a certain distemperature of the atmosphere—of an epidemic constitution of the air—without recollecting that these are mere phrases, gratuitous assumptions, barren generalities. Thus far, however, is quite certain, that popular diseases do prevail independently of any apparent changes in the sensible qualities of the atmosphere, as heat or cold, moisture or dryness, density or rarity, and equally so of morbid impregnations of every description. We are, therefore, in prosecuting our investigations, to look for the cause of such extensive effects in modifications of the constitution of the atmosphere itself, not so much in any variations in its proximate, as its ultimate elements, though even the former may differ under particular circumstances. Chemistry, from the imperfection of its resources, has hitherto done little for us

in this respect. But much is to be expected from the future improvements of that science, and in the mean time we may be permitted to indulge in conjecture and speculation.

It is my conviction, that electricity exercises no inconsiderable influence in the production of those atmospherical changes, which become the causes of disease. Though ignorant of its precise nature, we have abundant proof of the activity of the principle throughout the economy of the universe. Concerning its direct agency in the living system, modern experiment has demonstrated it, if not as the real nervous influence, at least as the excitant of it, and which is corroborated by some pathological facts. During thunder storms, for instance, distinct from any sense of terror, how seriously affected are many persons, who are even admonished of their approach, anterior to any visible signs, by headachs, pains in the bones, anorexia, or sickness of stomach, and by tremors and convulsions. There are individuals so acutely susceptible to impressions of this kind, that they can actually predict the coming of a storm, by the peculiar state of their feelings. It is related by the late Professor Rush, that the captain of the vessel in which he crossed the Atlantic, was unerring in this respect.

To what extent, or how electricity operates in effecting the atmospherical changes to which I have alluded, it is impossible to say with our present intelligence. Denying altogether its influence in the case, the fact of the changes must still be admitted. Conditions of the atmosphere take place not cognizable to the senses, which seem to originate as well as to promote the spread of diseases already existing, and to affect their character by mitigation or aggravation, and in other ways. No organized being, indeed, escapes their effects. There are times in which the most extensive sickness and mortality prevail among animals and vegetables, which can be traced to no other source. Every farmer is aware of this, and we shall presently see many illustrations of it, derived from our medical records. The poet of nature, Lucretius, beautifully alludes to this morbid quality



of the air, and in which he has been imitated by the Mantuan bard, in passages, however, too long for citation.

Concealed, as the immediate cause of certain epidemics is, the subject is one of legitimate study, and may be pursued with great practical improvement in reference to the phenomena, and the determination of the laws of such diseases. It is with this view I shall present the most interesting facts, which I have collected with some labour and research.

It was remarked, in the early stage of this discussion, that the approach of epidemics is commonly announced by the manifestations of great disturbance in the order of nature. Without going to the full extent of the hypothesis which I then noticed, of their connection with comets, earthquakes, volcanic eruptions, meteors, hurricanes, &c. it may be safely averred that they are, for the most part, either preceded, accompanied, or followed, by very unusual phenomena. We have seen that they are intimately associated with certain states of the atmosphere, as well in relation to its sensible as insensible qualities. But there are some other circumstances which claim our regard.

In many instances epidemics are distinguished by great mortality among the lower animals, and by the destruction of vegetables in anticipation or during their pendency. Holy Writ abounds in proof of it, and we read in the earliest of the poets, where he describes the pestilence among the Greeks, that

“On mules and dogs the infection first began—  
And last, the vengeful arrows fix’d on man.”

*Pope’s Homer.*

The following lines occur in another of the ancient poets:

“For all those plagues which earth and air had brewed,  
First on inferior creatures tried their force,  
And last they seized on man.”

*Dryden’s Ædipus.*

We find in Virgil a similar allusion:

“During th’ autumnal heats, the infection grew,  
Tame cattle, and the beasts of nature slew.”

*Dryden’s Virgil.*

It is hardly necessary to advert to the exquisitely beautiful description which Ovid gives, in one of his *Metamorphoses*, of an awful visitation of pestilence in the island of *Ægina*. It may be collected from it that the disease attacked birds, dogs, sheep, and oxen, prior to mankind.\*

From Plutarch, we further learn, that in the very first instance of pestilence in Rome, "that even trees and cattle were not exempt from the malignity of its influence, but, all nature lay one desolate and abandoned waste."† Livy tells us, at a subsequent period, of a "pestilent season, in town and country, equally affecting men and cattle"—and Dionysius, describing the same event, says, "that the disease seized *studs* of mares, *herds* of oxen, and *flocks* of goats and sheep."‡ The former historian notices the same fact, in a plague which occurred long afterwards.§

The year preceding the memorable plague in London, was distinguished by a great malady among cattle. By one of the historians of the disease, we are informed, "to some great sheep masters, it makes one of the epochs still, and is called the *rotten year*, most all their flocks dying then."||

In this condition of the air, some species of insects are copiously generated, while others sicken or die. Diemerbroek, on the authority of a number of writers, declares that "an uncommon abundance of insects, for many ages, has been noticed to portend pestilence"—and relates that in the plague of 1663, and in that of Holland in 1635, "gnats, butterflies, beetles, grasshoppers, hornets, and especially flies, existed in incredible quantities."¶

It is remarked by Lord Bacon, that those years have been noticed for pestilence, "wherein there were great numbers of frogs, flies, locusts," &c. The observation had been previously made by Aristotle in relation to frogs, and is confirmed by Horstius, who adds that, at the same time, "canker worms, snails, and locusts abound, and are the infallible signs of pestilence."\*\*

\* Lib. vii. 523. Web. p. 29.

† Life of Romulus, Web. p. 30.

‡ Livy, 3, 6. Dionysius Hal. lib. xx. Web. p. 34.

§ Web. p. 37.

|| Stat. vol. i. p. 338.

¶ Diemerbroek de Peste.

\*\* Web. vol. ii.

Concerning the appearance of locusts in connexion with pestilence, the fact has been stated by many writers, and by Mead particularly, who, however, supposes that they occasion it by putrefaction after death. The Bible has references of this kind. During the yellow fever in this city, in 1793, a prodigious number of flies and mosquitoes was observed, and great mortality among domestic animals, particularly cats. The same happened as to cattle in the country, from a febrile affection till then unknown, denominated the *yellow water*, from the bilious hue of the serum of the blood.\*

Birds seem to be equally affected by such morbid condition of the atmosphere, and either disperse, or sicken and die. In the plague at Nimeguen, in 1635 and 1636, "they were much more scarce than at other times, and cage birds died without any obvious cause."† Golclinius mentions that in the pestilence of 1611, birds suddenly fell to the ground, or deserted their nests and young to escape, which is also noticed by Schenkius in that of 1505 and 1522, by Van Swieten in that of Dantzic, in 1709, by Short in that of Venice, in 1570, by Schyller in that of England, by Sorbait in that of Vienna, and which is fully confirmed, in the opinion of Mead, as a general fact. The circumstance, indeed, did not escape the observation of the ancients. Thucydides relates, that in the plague of Athens, "the birds which usually preyed on human flesh entirely disappeared, not one being seen about the unburied carcasses, or in any other place at that time"—and Livy states, that in the terrible sickness in Rome, in 571, "not a vulture was to be seen for two years."

The year 1663, which produced a pestilential fever among the settlers at Plymouth, New England, was also remarkable for swarms of large flies, filling the woods with their hum. The plague of Dantzic, according to Gottwald, in 1709, was preceded by an immense number of spiders, and the same happened in 1611, according to Golclinius, who writes that in the plague which prevailed in Germany, "a sudden and amazing quantity of spiders appeared."

\* Rush.

† Diemerbroek de Peste.



During the prevalence of our late summer epidemic, which continued for three seasons, mosquitoes abounded beyond all former example, and on its cessation, scarcely one of them was to be seen.

Many of the ancient writers notice the silence of the grasshopper, and the drooping inactivity of the bee and the silkworm, as one of the presages of, or attendants on, pestilence.

It is this coexistence of epidemics with such a profusion of insects that has led some writers to suppose that they might be the source of the disease. But the hypothesis rests on a very slender foundation, and even admitting the premises, it seems to me a much more rational conclusion, that this unusual fecundity is owing to the state of things of which epidemics are the effect. The only fact with which I am acquainted, that lends it any support, was revealed in some recent investigations of our yellow fever, the black vomit being found, during the life of the patient, so filled with animalcula as essentially to constitute that fluid.

Extensive disease among vegetables was considered by the ancients even as a cause of epidemics. The Romans seem so much to have dreaded particularly a species of rubigo, or corrosive mildew, that they instituted what was called *Festa Rubigalia*, and worshiped an imaginary divinity under the name of Robigus, offering in sacrifice a sucking pup. It is in reference to this ceremony Columella says,

“Hinc mala rubigo, virides ne terreat herbas  
Sanguine lactentis catuli placatura et extis.”

Contemporaneously with the occurrence of yellow fever, in 1793, much sickness was observed among the trees of the city and neighbouring country, and particularly the peach tree. It continued during the whole period, a series of years, of the epidemic influence, so much so that we were nearly deprived of that fruit. The foliage of the tree became yellow, and it gradually pined away till it finally perished. On the cessation of this morbid agency, we had no difficulty in raising the trees, and now abound with the fruit of the finest quality.

Heavy dense mists, with blasting and mildew, are occurrences which have also been observed in connexion with pestilential states of the atmosphere. The Sacred Writings furnish many allusions of this purport, and similar facts are elsewhere recorded, a large collection of which has been made by Webster. During the plague at Dantzic, in 1709, he tells us that such a fog spread over the city, and likewise at New York, in 1798, when the yellow fever was at its height. It is stated by Van Swieten that clouds often hang over infected places. Diemberbroek avers that at Nimeguen, in 1636, the putrefaction of flesh, and all other things, was more rapid, and Forestus lays it down "as one of the undoubted signs of a pestilential atmosphere, when all sorts of bread, fruit, flesh, &c. become quickly putrid." Many instances are enumerated by the celebrated Boyle, from respectable authorities, of blight and mildew at such times, and in the extensive plague of the third century, a dew existed covering every thing with mould and corruption, and moreover, at Oczakow, in 1739.

In a pestilence at Laguirra, Warnefrid asserts that the doors of houses, garments, goods of every sort, utensils, &c. were so deeply stained as not to be effaced, and a similar incident is noticed by Diaconous, in the dreadful plague of 746.

No one element escapes this pervading principle. The waters of shallow streams, becoming turbid and ropy, are filled with vermin of various kinds—and, descending into the "vasty deep," fish and oysters are found thin, sickly, and perish in numbers.\*

The most common, however, and perhaps certain, prognostic of epidemics, is to be deduced from the nature of the prevailing diseases. These, for the most part, are of more than ordinary violence, partaking in some degree of the character of the coming epidemic. But it occasionally happens that there is an entire suspension of disease, like the fearful calm which anticipates the hurricane.

In support of the first part of this proposition, it may be stated on the authority of Mead, "that fevers of extraor-

\* Webster, vol. ii. p. 153.

dinary malignity are the usual forerunners of plague, and the natural consequence of that ill state of the air which attends all plagues."\* Diemerbroek, in speaking on this point, says, "this most furious and malignant fever, the precursor of true plague, changed every day for the worse, assuming more and more the symptoms of putrescency, till it became spotted, and passed into the most decided plague."† Nearly all the pestilential fevers which have desolated Europe for the last three centuries, were announced by such harbingers—as that of Venice, in 1576, of London, in 1625 and 1665, of Nimeguen, in 1636, of Naples, in 1656, of Marseilles, in 1720, of Aleppo and the Levant, from 1759 to 1763, of Holstein, in 1764, of Moscow, 1771, &c."‡ Examples, however, to the contrary may be cited. We are told by Thucydides, that the year of the plague in Athens "was universally allowed to be the healthiest and freest from all other diseases." Differing from Sydenham, it is affirmed by Hodges that, antecedently to the occurrence of the plague in London, "all things from nature were *promising and serene*, and this destroyer invaded us on a sudden." The plague of Malta, in 1813, so far as we are able to learn from its historian, was without any premonition of this kind.§

Touching our own pestilence, it varied in this respect in different seasons. During the epidemic state of the atmosphere which existed in the first years of its occurrence, it was remarked that the preceding diseases gradually assumed a more aggravated character, so that its appearance might be predicted. But afterwards, when it appeared sporadically, or only in a limited degree, such presages were wanting. It may be further observed, as a fact worthy of preservation, that in more than one of the malignant seasons, the antecedent diseases were suddenly suspended for a week or two, the frightful calamity bursting forth, without the ordinary warning, on our city.

\* Mead's Works, p. 174.

† Diemerbroek de Peste, cap. iii.

‡ Webster.

§ Faulkner on the Plague of Malta.

(To be continued.)



## CASES.

[THE ensuing cases we derive from the last volume of the Transactions of the Dublin College of Physicians. We are induced to republish them, as well from their importance, as affording support to a mode of treating hæmatemesis, and most other hæmorrhages, which we know from experience to be safe and efficacious. EDITOR.]

ART. XI. *Of Hæmatemesis, cured by emetics of Ipecacuan.*

By EDW. SHERIDAN, M. D. Licentiate of the King and Queen's College of Physicians, &c.

MY revered father, who practised medicine with considerable repute in the county of Cavan, upwards of half a century ago, was in the habit of giving emetics of ipecacuan in cases of hæmatemesis; and he declared that this practice never disappointed his expectations, when timely used, during a course of thirty-nine years' experience. Although Dr. Bryan Robinson, who was an eminent physician in this city upwards of eighty years ago, and several other practitioners, carried the use of emetics very far in different diseases, yet no physician, before my father, appears to have ventured on this remedy in hæmatemesis, and he was perfectly justified in calling it a discovery of his own. Although, as might be supposed, I entertained a partiality for my father's opinion, yet a number of considerations deterred me from following his practice in this particular for several years. However, having witnessed some fatal instances of the disease, I ventured at last to try it; and in the five cases which fell under my observation, the success was complete. Two of those occurred in the country while I lived there, and were not of the worst kind; but the three in town being very violent, and attended with the most imminent danger, I shall give them in detail.

The subject of the first case was Jane Halpen, a young unmarried woman, between twenty and thirty years of age. She complained of great oppression and pain about the præcordia, attended with violent palpitations: she had taken

some saline purges, with little or no benefit. When I first saw her, I found a great discharge of dark-coloured blood. I had recourse to the usual remedies, but did not venture on the lancet, as her pulse was weak and low, and there appeared no activity in the arterial system. She threw up no more blood on that day or the next, but the oppression continued, accompanied by nausea, and there was no sign of returning health. On the third day the vomiting of blood came on again, and the discharges of blood were as great as before, with an increase of debility. As the vomiting had ceased before I arrived, I thought that so great a discharge of blood might probably have entirely removed the local congestion which appeared to be the cause of the disorder, and therefore abstained from administering the ipecacuan. She passed that day and the next without any return of vomiting; but on the day after, it came on with greater violence than ever. I was sent for, and, when I arrived, I saw discharged an immense quantity of blood. I do not exaggerate when I say it amounted to several quarts, partly grumous, and partly fluid, dark and venous as before. Her strength was now exhausted, her pulse scarcely perceptible, and the throwing up of blood still continued. She looked ghastly, and I could not doubt that if the hæmatemesis continued longer, it would soon terminate her existence. I ordered thirty grains of ipecacuan to be taken immediately. The vomiting, at first, ceased for some minutes, but then re-commenced, and she threw up a quantity of clotted and fluid blood, the last of which was mixed with mucus. After this the vomiting entirely ceased, but she lay in an alarming state of debility. She appeared pale and wan, her respiration and pulse could hardly be perceived, and her animal heat was almost gone. I directed warm flannels to be applied to her extremities, with the lightest nutriments and cordials to be repeatedly given in the smallest quantities. She began to acquire a little strength in a few days, but soon after there came on anasarca and ascites in a considerable degree, which at first seemed to me very alarming. Those symptoms, however, in a short time gave way to the use of aperients and diuretics, and she was soon perfectly recovered.

The second case was that of Mr. Turpin, a builder, on Summer-hill. He was much exposed to cold and wet in his business, and for the last eight or ten years did not enjoy good health. He was subject to pain across the præcordia, which was sometimes so violent, that, to use his own expression, he was obliged to twist about in his bed like an eel. Whatever food he took generally caused a sensation of pain or soreness in his stomach. He sometimes vomited, and laboured under symptoms of pyrosis. His bowels were generally too free. He took a variety of medicines, some of which alleviated his complaints without removing them. At length, on the 24th of last December, about nine o'clock in the morning, after much of the usual severe pains, great oppression, and palpitation of the heart, he threw up more than a pint of coagulated dark blood; shortly after he vomited some ounces of fluid dark blood. I saw him at one o'clock, and found him labouring under great oppression, and considerable palpitation of the heart, but the pain across the præcordia was not very severe: his pulse was weak and low, but not very quick. I ordered the ipecacuan emetic to be taken immediately, and left such directions as I thought proper: soon after, and before the messenger had returned from the apothecary's, the symptoms increased, the pain across the præcordia became intense, and he vomited a vast quantity of grumous dark blood. I saw it next morning, and think that it must have amounted to more than three quarts. A great increase of debility ensued, but no alleviation of the symptoms: in this state he took the ipecacuan. It rested for some minutes on his stomach, and then operated in three or four fits of vomiting, by which he threw up more than a pint of the same kind of blood. Here all the symptoms subsided: he found himself perfectly relieved: heat was gradually diffused over his whole surface, which had been cold before. He fell asleep: a gentle perspiration ensued, which continued a good part of the next day: his pulse became full, soft, and regular, and he felt himself, he said, more free from pain, oppression, or sickness, than he had been for years before. On the day after I gave him a mercurial purge, which brought away a great quantity of



such matter as he had vomited, with this difference, that it was blacker, and resembled the discharges in *melæna*. He continued to improve, but was still weak : in this state, contrary to the most positive injunctions, he made too free, and the pain across the *præcordia*, the oppression, &c. returned. Under these circumstances I did not hesitate to repeat the *ipecacuan* : all these symptoms vanished, and he since continues to improve.

The third case was presented by my former patient, Jane Halpen, whom I had not seen for upwards of three years. On being sent for, I found that she had vomited, I believe, more than three parts of blood, partly coagulated, and partly grumous. Her anxiety, oppression, and the palpitation of the heart, were extreme. Her pulse was scarcely perceptible, coldness and paleness were diffused over her, and her eructations were enormous. It was by those, I suppose, she was affected, when the bystanders thought she was choking by such coagulated blood as she had thrown up, which they compared to a piece of liver. They made great efforts to open her mouth, in order to extract the coagulated blood ; and during these efforts they once imagined that she had expired. While these operations were going on, they had placed her in a chair close to a window, with the window up. I ordered her to be laid in bed, and prescribed the *ipecacuan* emetic. After taking it, her stomach became quiet for about ten minutes, when she threw up a good deal of watery and mucous fluid, with some bile, but no blood. Immediately after, all the symptoms, as if by magic, ceased. A gentle heat was diffused over her whole body ; a soft perspiration ensued ; she fell into a refreshing sleep, and awoke next morning quite free from all complaint, except debility. On this day I ordered a mercurial purge, to be taken the following morning, which brought away a great quantity of matter similar to that which she had vomited, but of a darker colour, and resembling the discharges in *melæna*. Her general health and strength continued to improve, and I now questioned her concerning the state of her health since I had last attended her. She stated that she had enjoyed excellent health till about three years ago, when, as she supposed, from hard work in wet

and cold, the catamenia, which had always been very regular, came on more frequently than usual, and in greater quantities, followed by leucorrhœa, pain and weakness in the loins, costiveness, flatulence, headach, languor, oppression, dyspnœa, &c. ; all of which she totally neglected, till the late attack of hæmatemesis came on.

These cases, with the two others which I observed in the country, have made such an impression on me, that I never can hereafter hesitate for a moment to have recourse to the ipecacuan emetic in hæmatemesis. I do not mean by this term a mere vomiting of blood, which may be produced by various causes, and in some cases of which emetics might prove very prejudicial, but the true hæmatemesis, which I think will always be sufficiently distinguished by the symptoms which have been above described.

If I might be permitted to occupy the pages of our Transactions with my views of the cause of hæmatemesis, I should endeavour to show that it is closely connected with what has been ascertained of venous absorption, by Majendie and other physiologists. The venous system of the abdomen is evidently engorged, for the blood discharged is venous ; nor does examination after death detect any rupture of vessels, or organic injury, although vast quantities of blood are often discharged in a short time. The motion of the venous blood in the abdomen is necessarily slow, and as the veins here are without valves, any obstruction in the liver, torpor or debility in the veins of that viscus, produces not only stagnation throughout all the veins of the abdomen, but also a retrograde motion of the blood ; whence an inverted motion of the veins follows, as their vital energy, thus roused, must be directed that way. Thus, I conceive, the venous blood is protruded into the exhalants, which being capable of great distension, pour forth into the abdominal cavities great quantities in a very short lapse of time. By the action of vomiting this inverted motion is altered ; the vital power of the veins is roused in a contrary direction : it is forced on in its natural course, and in this manner it appears to me that an end is put to the diseased action.

## REVIEWS.

ART. XII. *American Medicine.*

THE London Medical Repository, for October, 1824, contains a notice of the appointment of one of the editors of that paper, to the chair of the "Institutes and Practice of Medicine," in the University of—VIRGINIA!!

This annunciation has excited a feeling of more general indignation among American physicians than any circumstance that has occurred within our recollection, and we are inclined to believe the sentiment will be as lasting as it is universal. For our own part, we are pleased to find that our countrymen are disposed to resist such an invasion of their honour and interests, and shall willingly aid them to expose the impolicy and injustice of placing foreigners at the head of institutions, which are to be supported by Americans, and whose posts of honour should, of right, be the incentive and reward of native talent.

In considering this subject, we must commence by stating that our observations have no reference to the individual selected in this or any similar instance. With his pretensions, or merits, we have no concern, and this declaration must satisfy all who feel interested in the matter, that it is our wish to examine the subject solely on general principles.

The dependence of our medical and literary men on the dictation of European writers, has long been a source of regret to all who feel concerned for the character of our own citizens: and strenuous efforts have been made to awaken, in the minds of our countrymen, a determination to qualify themselves for asserting and maintaining the rank they ought to hold. The condition of society in Europe



being very different from our own, offers the greatest inducements and rewards to those who are ambitious of professional distinction, and necessarily enables many to attain the highest standing, who otherwise, with all their talent, would have been obliged to expend their time in search of mere subsistence. The reverse of this condition has exerted its full influence here, where there are very few offices of emolument, no governmental patronage, and, alas! no opportunities of distinction afforded by private munificence. While the physicians of our country are engaged in the labours of professional life for the support of their families, little leisure can be allowed them for the cultivation of particular branches of study, and still less for the more general acquisition of ornamental learning. A man, fatigued with the details of practice, and whose time is never at his own disposal, can rarely do more than keep himself acquainted with the existing condition of medical science; and hence, instead of engaging in the composition of original works, he is forced to be content to read such as are proffered by those whose business is that of publication. In this way the writers of Europe have gained an influence here, which has been maintained not by any defect of ability in our professional men, who have been, and continue to be, withheld from the display of their powers by the want of opportunity to engage in the competition necessary to their success. This influence, thus acquired, has been most ungenerously used by the very persons who have been most immediately benefited; and we frequently find Europeans, who have owed a large part of their reputation to the accidental state of things here, most liberal in their sarcasms on the state of our general and professional literature, and most severe in their criticisms on the slightest attempts to throw off a bondage produced more by our necessities than their talents.

The very impertinence and presumption\* indulged in by these self-constituted judges, who measure all things by

\* Those who are in the habit of reading the English journals need no reference to particular instances of this kind, as they are too frequent and obvious to require indication. In a late number of the *London Medical*

their own standard, have gradually produced a general movement to set aside their pretensions by the sure method of giving to native talent the proper motives for exertion, and holding out the rewards that may stimulate the meritorious to their best efforts. In all parts of the Union medical societies have been formed, medical libraries are forming, and medical institutions opened. The observations of the experienced have been elicited, and the ambition of the junior members aroused. The consequence has been, that, within a comparatively short time, the American profession has contributed as large a stock of valuable information for the improvement of medical science, as any equal number of men in the world: and although we cannot *yet* enter the field on any thing like equal terms with our adversaries, we feel secure in stating, that no long time will elapse before the force now disciplining will be sufficient effectually to displace them.

In aid of this laudable spirit of emulation and pride of nationality, the medical schools of our country, with some few exceptions, have given their honours and emoluments exclusively to American talent, in the persons of citizens by *birth* or *naturalization*. This has induced all who are anxious for distinction, to look up to these schools as to fostering parents, solicitous to develop the genius, and give importance and usefulness to the talents, of those who received their professional existence within their walls. To the offices connected with these institutions, supported by the voluntary contributions of our citizens, have all looked for the eventual remuneration of their most successful and persevering exertions: and though *all* cannot expect to be gratified, still the permission to hope, and the possibility of success, have never failed to keep alive the spirit of enterprise, which must ultimately produce the most beneficial results.

and Physical Journal, whose motto is a commendatory sentence from our countryman RUSK, we find an obscure American publication selected as a fair specimen of our Medical Literature, and an assertion that the editor *cannot recollect* any thing of *any consequence* that has been done by American physicians and surgeons!!

The University of Pennsylvania, in a manner worthy of a school owing its greatness entirely to native talent, has set the laudable example of ever preferring AMERICAN to exotic merit. This secures her that pre-eminence her long and invaluable services in the cause of medical science have obtained, and which is freely conceded her throughout our country. She has surrounded herself by a body of aspirants who will not suffer by a comparison with those of other countries, making proper allowance for difference of opportunities. The same course of policy is producing similar results throughout our country; and, if persevered in, as we have no reason to doubt, will be followed by an eventual superiority over all foreign rivalry.

We are willing to admit, that, in many instances, a man might be *imported* better qualified for a given purpose than any one who could, *at that moment*, be selected from among our own people. But suppose we called on a fellow citizen of known capacity, whose opportunities for displaying talent have been limited, and give him a situation where his ambition is awakened, while competence, ease, or wealth is secured, shall we not soon make a man superior to any one who could be brought from abroad? And are we not unjustifiable, if we throw away the opportunities of doing the highest possible benefit to our citizens, by affording them a fair chance of proving their worthiness of public confidence? We feel and acknowledge the importance of encouraging the manufacture and consumption of the materials so lavishly furnished us by nature for all purposes of art and usefulness, and why are we not to encourage, in every laudable way, the evolution and exertion of the talents and excellence of our citizens? Our medical schools have no support but what is derived from the people; they owe nothing to public patronage, and extremely little to private endowments. There is, therefore, the stronger reason why they should be the last of our institutions to dispose of profits or honours to the subjects of foreign lands.

Such appointments as that which has induced these remarks, imply that we have no one as well qualified as the



person chosen ; this implication we cannot possibly assent to. We cannot avoid believing that the State of Virginia alone, could furnish TWENTY physicians, as well qualified in every respect, let his standing or merits be what they may. But to say nothing of the ridiculousness of appointing a stranger to teach Americans the mode of treating the diseases peculiar to their own climate, there is an especial folly in inviting the subjects of a monarchical government to preside over *republican* institutions, without allowing those individuals the slightest chance of relinquishing their dear and deep-rooted prejudices in favour of what they ever call, with exclusive devotion, "HOME," and flattering them into a belief of its entire superiority over our country by the very act of preferring them to such situations.

The justly celebrated and distinguished Abbé CORREA DA SERRA, while residing in this city, was in the habit of frequently quoting an aphorism of Mr. JEFFERSON, in the correctness of which every one will concur : "The failure of almost all the great scientific or literary undertakings of Americans, is to be attributed to their employment of foreigners, instead of calling into exercise the talents of their own citizens." This sentiment is so much in accord with the known policy and feeling of Mr. Jefferson, that we cannot do otherwise than believe him altogether unacquainted with the appointments\* connected with the University of Virginia, notwithstanding it owes its existence very much to his exertions.

We do not hesitate to pronounce the policy of such appointments as most injudicious and subversive of the general good of our citizens, and especially of the dignity and interests of our professional brethren. We fully agree with those who have felt and expressed their indignation on this subject, without the slightest reference to individuals who

\* The Professor of Political Economy and the science of Government is also said to be a subject of *Great Britain* ! ! With this we have nothing to do, after what has already been said ; though we fear he will be an admirer of a "Political Economy" and "Government" very different from that most admired by the good people of these AMERICAN STATES.

may have been chosen, though we regret the unpleasantness of the situation in which they will be placed, especially as it is probable that the *American* medical societies throughout the country will protest against this act of injustice. We feel that we are discharging a duty in laying before our professional brethren the public expression of our sentiments. The same sentiments operate in England, especially, to the exclusion of all who are not natives, from places of high honour or profit, and we should imitate, in this instance, their example. Under such circumstances as the present, our motto should be "*fiat justitia, ruat cælum,*"—let right be done, though the universe perish. ☉

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ART. XIII. *A Treatise on the Diseases of the Eye; including the Doctrines and Practice of the most eminent modern Surgeons, and particularly those of Professor Beer.* By GEORGE FRICK, M.D. Ophthalmic Surgeon to the Baltimore General Dispensary. 1 vol. 8vo. pp. 320. Baltimore. Fielding and Lucas, jun.

THE neglect to which disorders of the eye were too long consigned is truly astonishing. We might have expected that the diseases of an organ, by which we receive our most pleasing impressions—an organ essential to our comforts, nay, almost to our happiness—would have been investigated with all the ardour and zeal which the importance of the subject should always inspire. Very different, however, has been the case: prepossessed with an idea that there was something peculiar in the diseases of the eye, as if there was no analogy in similar diseases attacking different parts, physicians entirely abandoned these affections to persons who were exclusively devoted to them, and were totally ignorant of the laws which influence diseases of other organs.

To this cause is to be attributed the slow progress which the science of ophthalmology made during many centuries. The history of this science shows that while it made most

rapid advances in improvement, by the investigations of medical men, it invariably, when abandoned to professed oculists, not only ceased to advance, but actually retrograded.

On the erection of surgery into a separate department, ophthalmic diseases, (which had been previously abandoned to persons strangers to the healing art,) were first selected as a branch of medical attention, by some of the physicians of Alexandria, among the most celebrated of whom was Philoxenes. The writings of Philoxenes have experienced the fate of many other Alexandrian physicians, and are entirely lost—but that considerable progress was made by them in the pathology and treatment of these diseases is evident from the writings of Celsus and Oribasius.

The Romans and Asiatic Arabians likewise considered ophthalmic diseases as a constituent part of medical science. They extended the observations of the early Greek writers, acquired an intimate knowledge of these diseases, as is proved by the perfect accuracy and minuteness of their descriptions, and the science was rapidly advancing to a state of great improvement. But during the dark ages which succeeded the overthrow of the Roman empire, these diseases once more became the province of professed oculists. These men were ignorant not only of anatomy, and of the general nature and cure of diseases, but even of the structure, economy, and morbid derangements of the delicate organ upon which they practised, as well as the properties of the remedies they fearlessly employed. They devoted themselves entirely to the preparation and multiplication of remedies, and to fanciful improvements in the mode of operating.

Under such circumstances, it is not to be supposed that any remarkable advances were made in this art, for it is as necessary to know what is best to be done, as the best means of doing it. In fact, it sunk to its lowest ebb; the knowledge acquired by the ancient physicians was suffered to fall into oblivion. The accurate ideas entertained by the early Greek writers of the nature and seat of cataract were forgotten—William de Salicet and Guy de Chauliac, the



only surgeons of this epoch who had the boldness to attempt the operation of cataract, entertained the antiquated and exploded idea, that it was owing to a pellicle stretched before the pupil. In this degraded state, the art continued, until it was once more united to medicine, and revived by applying to it the general doctrines of pathology and therapeutics. This revival first took place in Germany and Italy, and we are indebted to these countries for most of the improvements made since the time of the Asiatic Arabians. The elaborate work of Professor Beer, who has devoted a life to the subject, with those of Walther, Schmidt, Himley, and Langenbeck, and the venerable Scarpa, attest the success with which the art has been investigated in these countries. In fact, during the short period that it has been cultivated by men of enlarged minds and liberal education, more has been done for its advancement, than during centuries in which it was confined to the hands of a particular class, and separated by disingenuous arts and unfounded prejudices from its natural connexion with the principles on which the other parts of the science of medicine are founded.

In England, the honour of being the first to apply the doctrines of modern pathology to the diseases of the eye, is due to Mr. Wardrop: but it is to the impulse given by the zeal and industry of the late Mr. Saunders, and the extensive field for observation and experience afforded by the London Infirmary for curing Diseases of the Eye, established, at his suggestion, in 1805, that the present advanced state of the science in England is owing. The institution founded by Mr. Saunders, was unfortunately early deprived of his services by his death; but his place was ably supplied by Mr. Benjamin Travers, assisted by Dr. Farre; and subsequently by Mr. Lawrence, the present senior surgeon of the Infirmary. The work recently published by Mr. Travers, containing the result of his experience, should be in the hands of every surgeon. It exhibits deep research, minute observation, and correct deductions, and shows that in correctness of pathology, fidelity of diagnosis, and efficacy of treatment, ophthalmic surgery has attained to a

degree of perfection equal to that of any other department of the medical art.

In this country, much apathy has existed, and we fear still exists, with regard to these affections. Some of our distinguished surgeons have not, it is true, entirely neglected them; yet the mass of medical practitioners have paid little attention to them, and the science has advanced so rapidly during the last few years, that we believe few have kept pace with the improvements that have been made. The length of time that generally elapses before opinions of European writers are diffused in this country—the want of regular lectures—and above all clinical instruction—and the opportunities furnished of observing these diseases which can be extensively afforded only in institutions established for the reception of these cases—are the cause, no doubt, of the present state of the science among us. We trust, however, that these difficulties will not much longer exist. The advantages derived in Europe from institutions founded for the cure of these diseases, both as affording experience and a wide field for observation to the surgeon, means of obtaining clinical instruction to the student, and above all relief to the poor, whose subsistence depends upon their daily labour, and who, without this, would be deprived of the means of living, and thrown a burden on society, is most forcibly impressed upon the minds of all who visit these institutions. The wish to extend these benefits to this country has induced some public spirited individuals to found charitable establishments for similar purposes in New York, Philadelphia, and Baltimore.

The New York Eye Infirmary, established in 1820, has realized the most sanguine expectations of its patrons: during the first sixteen months that it was established, it afforded relief to upwards of eight hundred patients, and the number has since greatly increased, as the institution has become more extensively known. We are sorry to learn, that the Pennsylvania Infirmary for the Diseases of the Eye and Ear, established in 1822, is in a languishing state, from want of necessary funds. We trust these will no

longer be withheld. In no other way can greater benefits be diffused at a small expence. Frightfully rapid in their progress, diseases of the eye frequently run on to a stage which puts at defiance all subsequent remedial efforts, before the sufferer thinks of applying to the ordinary sources for relief; and before a practitioner unacquainted with the nature of these affections, suspects any danger, the sight is irretrievably lost. The unfortunate wretch is thus shut out from the principal source of pleasure, and the means of obtaining a livelihood—becomes a burden to himself and to society—while a small portion of the alms which our sympathy cannot now refuse him, if it had been applied to the support of institutions for the relief of these diseases, might have preserved him in the enjoyment of his faculties, and a useful member of society.

In Europe, experience has fully confirmed the utility of these institutions, and we trust that Philadelphia, distinguished for the number of her charitable institutions, and the liberality with which they are supported, will not let an institution, calculated to do credit to her generosity—to furnish instruction to the numerous medical students who annually flock to her schools—and preserve to the community many valuable citizens—languish for want of funds, when a little foresight, too, would show, that there is an actual saving in such an appropriation. For a small portion of what would be required for the support of persons who have lost their sight, and which must eventually be paid in the shape of poor rates, would suffice for its support.

With respect to the institution at Baltimore, we have but little information to communicate. It is attached to the Baltimore Dispensary, and is committed to the care of the author of the work, which we proceed now to notice.

It was with no little pleasure that we first heard this work announced, and this pleasure was not subsequently diminished by a perusal of it. The author evidently possesses a cultivated and well disciplined mind—he appears to be familiar with most of the writers, particularly the German, and we feel much indebted to him for making us acquainted



with their writings. The Germans have excelled in this department of medical science—their works are little known in this country, and their being in a language not often studied here, will prevent their being diffused—we trust therefore that our author will accomplish the design he at one time entertained, of presenting to the public a translation of the work of the venerable Professor Beer. We possess in our language, accessible to the American student, no elaborate systematic work on these diseases, and the treatise of Dr. Frick will not supply this deficiency—indeed, as the author modestly remarks, it claims no pretensions as such, it is intended simply as a manual for those who are just entering upon the study of these diseases.

Our author arranges the diseases of the eye under four general heads. The first includes the various forms of inflammation of the eye; the second, the effects or sequelæ of this inflammation; the third comprehends the various diseases of the appendages, and the fourth, such diseases as attack at the same time several or all of the tissues of the organ.

We shall not attempt an analysis of the entire work; since, to do justice to it, would require more space than we can devote to the subject, and would, perhaps, be unnecessary, for we trust that the work itself will be in the hands of every one who feels any interest on the subject. It is the only general treatise on this subject accessible to American students, and we hope we have said enough to convince them that the subject is one that ought not longer to be neglected. We proceed to notice the more important diseases.

Our author's account of pure inflammation of the eye, (*ophthalmitis*), is exceedingly minute and accurate; it does not, however, differ in its symptoms from inflammation in other organs, except that they do not occur simultaneously, but preserve an uniform progress.

When the disease is violent, blood is sometimes effused into the chambers, or the eye suppurates. The globe is enlarged and protruded from the socket. The cornea loses its transparency, becomes opaque, ulcerates, and the con-

tents of the eye are discharged. The eyeball then collapses, and the vision is entirely destroyed. This unhappy result is one, we believe, of by no means unfrequent occurrence. We have been repeatedly applied to by persons whose eyes have been destroyed in this way ; the humours evacuated, and the the eyeball contracted in the middle, exhibiting somewhat the appearance of an hourglass. Under these circumstances, no relief can be afforded the unfortunate sufferer ; but the disease, in its early stages, is quite manageable, and rarely, or never, terminates unfortunately when properly treated.

We cannot entirely agree with our author, with respect to the good effect of scarifications in this disease. The fears of the patient render it exceedingly difficult to make them sufficiently deep, and in the few cases in which we have succeeded, we have not been entirely satisfied with the results, and we are sure that when the operation is imperfectly performed, it is prejudicial.

The proper remedies in this disease are bleeding, general and local, according to the urgency of the symptoms ; purgatives ; tartar emetic in small doses, alone or combined with nitre ; blisters, and when the inflammation is entirely reduced, mild astringent collyria. We entirely agree with our author, that "strong astringent collyria, as applied by many surgeons at the very commencement, or in the early stage of the inflammation are always injurious," and we think this precept cannot be too strongly insisted upon.

*Strumous ophthalmia* is principally confined to children. Its chief characteristics are swelling and redness of the eyelids, which are generally half closed ; and the greatest intolerance of light. The child generally seeks the darkest recesses of the room, and buries its face in the pillow or its mother's lap, and is constantly rubbing its eyes in consequence of the sensation produced by the acrid, pungent tears, which are constantly distilling from the half separated eyelids. The redness of the conjunctiva is unequal, the vessels running in distinct fasciculi, towards and some-

times over the cornea, and at the end of these a small pustule frequently appears, which bursts and becomes an ulcer.

Our author very correctly remarks, that severe antiphlogistic measures are scarcely ever necessary; that the chief attention should be directed to restoring the secretions of the body. He recommends, for this purpose, the liquor ammoniæ acetatis with vinum antimonii and a small quantity of the syrup of poppies; the ipecac. comp. in small doses; calomel and opium; and when the cornea is opaque, calomel or blue pill to the extent of slightly affecting the system; and if the disease does not yield to this plan of treatment, tonics, the best of which he thinks are the mineral acids, and above all the sea or shower bath.

The remedies which we have found most beneficial in this are, in the early stages, leeches and calomel, with nitre and tartar emetic, and afterwards pulv. rhei and creta pp. in combination, blisters to the nape of the neck or behind the ears, kept discharging, and the ung. hydr. rub. to the eyelids. The glands along the edges of the eyelids (meibomian) are always affected in this disease, as is shown by the straggling appearance of the eyelashes, &c. We have derived the most striking benefit from the use of this ointment in these cases. The strictest attention to diet should be observed, the patient kept in a darkened room, and all bandaging of the eyes forbidden; they are invariably injurious. When there are ulcers of the cornea or nebulæ, we have given the calomel in small doses, alone or combined with tartar emetic and nitre, with decided advantage, and we think that we have derived benefit from the use of the nit. argent. in solution, though our author disapproves of all topical applications.

Our author's account of purulent ophthalmia is accurate, we shall not, however, attempt an analysis, but refer the reader to it, and to the excellent essay of Mr. Saunders. We pass over, likewise, Dr. Frick's account of gonorrhœal and rheumatic ophthalmia, and proceed to make some observations on *iritis*.



As our author has very correctly remarked, there is no disease of the eye which has a more rapid tendency to destroy vision, when left to the simple powers of nature than this, and few over which the exertions of art have a more decided and beneficial control.

We have to regret that Dr. Frick has not entered into the pathology of this disease, as it involves numerous and very weighty considerations, many of which are by no means settled, and which have an important bearing upon its diagnosis and treatment. We had intended to attempt to supply this deficiency, but we found that it would lead us into such an extended inquiry and discussion, that we have concluded to postpone it for the present.

Dr. Frick divides iritis into idiopathic, syphilitic, and arthritic; he gives the symptoms of each, but it will be difficult to distinguish, particularly the two last, by any combination of symptoms; the history of the case will often furnish us a surer guide.

If there is any disease which requires prompt decision and efficient treatment it is this; it will not do for us to be "governed by the same general principles which regulate the treatment of inflammation in other parts;" the pain, redness, and state of the pulse are here often insufficient guides. Adhesive inflammation frequently takes place, and the sight is irretrievably lost, without any other warning of the extent of the injury that is going on, except a gradual loss of vision.

Dr. Frick recommends in idiopathic iritis, "a full and free bleeding, which may be repeated in a day or two," followed by an active cathartic, and small doses of tartarized antimony; if the symptoms continue violent, "local bleeding and fermentations, and, finally, to remove the effused lymph of mercury. We are far from considering this as sufficiently energetic practice, blood should be drawn freely from the arm, and this promptly followed by topical depletion, purgatives, and application of the belladonna or stramonium. If the inflammation is not immediately relieved by these means, mercury should be resorted to without de-

lay. It is not sufficient in this disease to be satisfied with relieving symptoms as they occur, if we do, the only opportunity of acting with effect will be lost ; we must endeavour to anticipate them ; if we wait till coagulable lymph is formed, it may become so organized before the mercurial action can be excited, as to resist all subsequent remedial measures. Professor Beer censures the use of the belladonna, he thinks it has a strong tendency to weaken the powers of the retina, we believe this is incorrect. Its utility is strongly advocated by all the English writers, and its application should not be neglected. It sometimes entirely presents the irregular contraction of the pupil, and seems even to have a specific effect on the general inflammation. Tartar emetic is useful as an adjuvant, in keeping down arterial action, but must not be depended upon as fulfilling any very important indication. Digitalis has been recommended, with the view of depressing arterial action, but we think it is worse than useless, as inducing the practitioner to waste time that should be employed in the application of more efficient measures.

In syphilitic iritis the treatment is nearly the same. It is not required to carry depletion to so great an extent as in the idiopathic disease, but it must not be neglected ; we do not believe "the application of a few leeches to the eye to be in general sufficient," and mercury must be even earlier resorted to. Dr. Frick recommends "for the nightly attacks of pain, so peculiar to this disease, that the patient should rub into the eyebrows each night, and a short time before the pain is expected to come on, a small quantity of mercurial ointment united with a portion of finely powdered opium ;" this will be found highly useful. Great relief will also be afforded by free topical depletion, which should not be neglected.

The treatment of rheumatic or arthritic iritis must depend in a great measure upon the predisposing cause ; if connected with gastric derangement, we must endeavour to restore the healthy condition of the chylopoietic func-

tions, in protracted cases an emetic will often cut short the disease of the eye.

The disease described by Dr. Frick, as internal ophthalmia, appears to us a mere variety of iritis, and we shall therefore offer no remarks concerning it.

Dr. Frick's remarks on opacities and ulcers of the cornea, are exceedingly accurate and well written, and we recommend a careful perusal of them; but his account of staphyloma corneæ is by no means satisfactory. He quotes the opinion of Scarpa, who maintains that it is caused by a "preternatural fluidity or turgescence of the vitreous humour," and that of Beer, who thinks it depends upon a diminished absorption of the aqueous humour; and our author, himself, appears to think that it is owing to an increased secretion. We believe that it is not owing to any of these causes, but to ulceration of the cornea.

There are two kinds of staphyloma, one produced by a dilatation of the inner lamina of the cornea, and the other by their rupture. In the first, the lamina are bulged, being so weakened by ulceration as to have lost their power of resistance. In the second, the breach caused by ulceration is filled by lymph, which is protruded in a conical form. Sometimes the two forms are combined; the inner lamina after bulging being ruptured in one or more points and conical protrusions formed upon it. The pressure against the sides of the ulcer causes their absorption, and the staphyloma, which in the first instance had an appearance of a small vesicle, is thus enlarged, till it sometimes occupies the whole cornea. The deposition of lymph also takes place, and the protruded parts are very much thickened. If the ulcer is situated in the centre of the cornea, and does not extend to the edge of the iris, the inner membrane projects in the form of a vesicle and the iris is left free; but if perforation takes place within the limits of the iris, adhesion of that part within the circumference of the ulcer takes place, and the pupil is drawn in that direction. The contact of the pigmentum nigrum gives a perfectly black colour to the point of adhesion quite different from the colour of the iris in si-



tu; but as the protrusion increases, this black tinge disappears, and it acquires a bluish hue.

Dr. Frick has described, very accurately, the different operations for artificial pupil, but as we trust all those who have any interest in the subject will read the work itself, and as we think justice could not be done to the author in any short notice, we shall not attempt it. For the same reasons we shall pass over the chapter on amaurosis, which contains a brief but very interesting sketch of the different varieties, and the treatment of this too frequently unmanageable disease.

The term cataract, our author observes, is given to every kind of opacity, having its seat between the vitreous humour and iris, and which, preventing the rays of light from reaching the retina, causes a greater or less degree of indistinctness in the vision.

This disease is usually of slow formation; we have seen it, however, perfectly formed in three weeks, in consequence of inflammation caused by mechanical; injury and Mr. Travers once saw a case in which it was formed in two days.

Dr. Frick describes the four well known species of cataract—the hard, caseous, milky, and capsular, and then notices the *cataracta capsulo-lenticularis*, *cataracta capsulo-lenticularis cystica*, *cataracta capsulo lenticularis cystica tremula* and *natalis*, *cataracta arida siliquata*, and *cataracta capsulo-lenticularis cum bursa ichore continente*. Be not alarmed, reader, by this list, the names are its only novelty, they are merely varieties of the four first mentioned species, as are the very many others described by the German writers, all of which are distinguished and dignified by equally appropriate appellations, but which the good sense of Dr. Frick has prevented his noticing.

We take this opportunity of protesting against the introduction into this country of the barbarous names which the German ophthalmologists have so extravagantly lavished on every minute shade and variety of disease. We trust more economy will be displayed here, but if any one doubts

the propriety of it, let him, if his guttural organs are sufficiently flexible to enable him to pronounce them, and he is hardy enough not to fear their effect upon his teeth and tympanum, read the index to any of their works on ophthalmic diseases, and he will be convinced. If a rage for generalization has been a bane to science, the rage for minute division and the multiplication of names has not been less so. It retards science, by rendering it necessary for the student to learn a new language for every department he studies—it deters him by the copious array of words which it presents—and occupies time in acquiring the barren knowledge of words, which should be spent in collecting ideas. We object, too, to the pedantry of translating phrases into a foreign language, especially when we have in our own, words equally expressive; thus, *union by the first intention*, appears to us quite as intelligible as “*per primam intentionem*”! In fact, if there is any expression which should be religiously retained, it is this, for it is to an English surgeon that we owe the present most important doctrines on this subject—one whose name is too well known, as connected with it, to require that it should be mentioned; as his fame is too well established to be benefited by any eulogium here. If, indeed, it were proper to adopt foreign expressions into a language, “union by the first intention” should be translated into the language of every country where surgery is cultivated.

Dr. Frick has noticed some of the complications of cataract: the most important of these is with amaurosis. It is exceedingly difficult, in some cases of cataract, to ascertain whether or not there is paralysis of the retina. Dr. Frick remarks, “a widely dilated pupil, and immoveable iris, were at one time looked upon as infallible criteria of this complication; but these symptoms are often caused by nothing more than the mechanical pressure excited by the lens, and are by no means constant and necessary symptoms of amaurosis. If, however, there be connected with these appearances of the iris, evident atrophy of the eye, or if the patient be unable any longer to distinguish light from dark-

ness, we may pronounce with certainty that there is amaurosis."

Dr. Frick adds a valuable caution; viz. that the surgeon should "never rely in any instance upon the simple *ipse dixit* of his patient, but examine most scrupulously for himself. Ask a person labouring under blindness from cataract, or any other cause, whether he has any sensation of light? and he will answer, most unequivocally, No! I am stone blind. Yet direct the same individual to fix his eye upon the window, the fire, or any luminous object, and intercept the rays of light, by moving the hand, or any opaque body, between the eye and object, and he can distinctly tell you."

The proximate cause of cataract is involved in much obscurity. Dr. Frick has, however, given a very good account of these causes as far as they are known. Professor Walther entertains some very curious and original notions on this subject, which our author has not noticed, and which we think are sufficiently interesting to be mentioned here. He thinks that cataract is the primitive and natural state of the lens, and that congenital cataract is not, therefore, an altered, but an unaltered condition, in consequence of a check given to the development of the embryo; and that, like other malformations, it is not owing to the influence of any active or formative cause, but having been originally present in every embryo at certain periods of its existence, does not disappear in its progress to a more perfect state, as it does when this progress is unchecked.

With respect to the propriety of operating for cataract, when one eye only is affected, the other remaining sound, much difference of opinion exists, even among the best ophthalmologists. The respectability of the surgeons arranged on each side are so equal, and the reasons urged by each for their opinions so nearly balanced, that it is not a little difficult to come to any conclusion: under such circumstances, the experience of every one must be his guide. For our own parts, we think that in a majority of cases, it is inexpedient to operate; but we confess our experience is



not such as to induce us to urge this opinion with very great confidence. Dr. Frick has not given his own sentiments, but quotes those of Baron Wenzel and Mr. Travers, who are advocates for its immediate performance. But we might mention that Dr. Physick, Professor Thompson, and others, disapprove of operating under these circumstances, and we confess that our judgment may have been influenced by that of the former gentleman; for we know that there is no one who more deliberately examines every circumstance, and more cautiously decides, than that truly great man; and we have therefore been accustomed to yield more deference to his opinions than to those of most other surgeons.

Dr. Frick has described the methods of operating for cataract now in use, and given many excellent directions, which are well worthy of being attentively studied.

Dr. Frick believes "that the ancients had very crude notions respecting the nature of this disease;" that they "supposed it nothing more than an adventitious membrane, filling up the pupil;" and that they knew no operation except couching: but we think that it can be proved that justice has not been done them in this instance—and that the operation for extraction was practised by them: they were of course acquainted with the true seat of cataract.

Antyllus, who lived at the end of the first century of the Christian era, describes very minutely this mode of operating. First, he cut the transparent cornea; then passed through the pupil into the crystalline lens a fine needle, which he turned lightly, in order to draw the lens out through the opening. He dressed the part with oil of roses, and white of egg, and ordered the patient to remain three or four days on his back, with his eyes closed.\*

It appears that about the same period dissections made known the true seat of cataract. In fact, Rufus of Ephesus distinguished *glaucoma* from *suffusion*, (*ὀπίχυμα*), consi-

\* Rhaz. contin. lib. ii. cap. 3. f. 41. d. (ed. Venet. 1529, in fol.)

dered the seat of the first to be in the crystalline lens, and regarded the second as the effect of the coagulation of a humour between the transparent cornea and crystalline lens.\*

Moreover, Avicenna, and the Spanish surgeon Abu'l Kasem,† in describing their method of couching, speak distinctly of its object being the depression of the crystalline lens; of course they must have considered it as the seat of cataract.

Among the surgeons quoted by Rhazès is a Greek named Lathyron, who operated for the extraction of cataract in the same manner as Antyllus.‡

The Persian, Ali, son of Abbas, treats minutely of the extraction of cataract, as well as of the depression.§

Avicenna mentions that the operation for extraction was very often performed in Persia, but he was not in favour of it, as it often occasioned the loss of the humours of the eye.||

Avenzoar believed the extraction of cataract possible; and Isa-ebn-Ali, a celebrated Arabian oculist, points out from hearsay the manner of performing the operation of extracting the crystalline lens, but he considers that it is much easier to describe than to perform it.¶

We thus see that the Greeks and Arabians were acquainted with the true seat of cataract, and practised extraction as well as couching; but the oculists of the middle ages were totally ignorant of what had been done by their predecessors. The accurate ideas entertained by the ancients of the seat of this affection sunk into oblivion, and cataract once more was supposed to be owing to a pellicle stretched behind the pupil.\*\*

At this period, the operations on the eye were abandon-

\* Paull. Ægin. lib. iii. cap. 22. p. 77.

† Avicenn. can. lib. iii. fen. 3. tr. 4. p. 553. (ed. Arab. Romæ.) Albu-  
cas. Chirurg. lib. ii. sect. 23. p. 168.

‡ Raz. contin. lib. iii. c. 3. f. 40. b.

§ Haly Abb. practic. lib. ix. c. 28. f. 163. c. (ed. Venet. 1492, in fol.)

|| Avicenn. can. lib. iii. fen. 3. tr. 4. p. 353. (ed. Arab. Rom.)

¶ Jesus de oculis, f. 17. b. (in fol. Venet. 1506.)

\*\* Guil. de Salicet, lib. i. c. 10. f. 307. a.

ed by the surgeon to wandering quacks, and the only operation they performed, or were acquainted with, was that of couching. The ignorance which prevailed in relation to cataract continued till the latter end of the seventeenth century, when the true seat of the disease was ascertained, and the operation of extraction again devised.

From the various and complicated nature of cataract, Dr. Frick remarks, "it is difficult to lay down any precise or established rules, with regard to the particular mode of operating in each case, and much must be left to the judgment, discrimination and experience of the surgeon, in determining the choice of his operation. It is in vain that certain writers would attempt to argue, that either mode can be adopted indiscriminately in all cases, or that by any newly invented or improved method, any single operation may be rendered applicable to all the varieties of cataract." We perfectly agree with our author as to the correctness of these observations, at least so far as respects extraction and *νεγаторυξίς* (cutting through the cornea): both operations are good, but they are applicable to different cases, and no comparison of their respective advantages should be made. As to couching, we are not sure that it is preferable in any case; we speak in reference to the patient. It is the easiest operation to perform, and is perhaps less liable to be followed by dangerous consequences, when performed by a bungling operator, than the others; for the same reason, couching through the cornea has been preferred to the perforation of the sclerotica. The objection we have to the operation, is the violence that is done to the vitreous humour and hyaloid membrane, which must be broken down to give place to the depressed lens, thus producing the symptoms of disorganization, congestion of vessels, turbid humours, flaccid tunics, palsied iris, and often amaurosis, from pressure on the retina: and the sight frequently does not improve after the immediate effects of the injury have passed away, but remains dim, or is gradually lost altogether. From this view of the subject, it is evident that the method of couching by *reclination*, proposed to obviate some of the bad effects of depression, is worse than



the old method, as more violence is done to the delicate structure that fills the globe of the eye.

The operation of extraction is the most perfect that has been devised; but it is not applicable to all cases. The objections that have been urged against it, are derived principally from its unskilful performance, and do not apply to the principle of the operation. "If the corneal section be clean, and situated midway between the pupillar edge and the margin of the cornea, or a little nearer to the latter, if it be of such extent as to allow of the perfectly easy escape of the lens, if the sclerotic conjunctiva, sclerotica, and especially the iris, be untouched, and the capsule freely lacerated, without lesion of the vitreous capsule, then the operation is perfect."\* But if it is not so skilfully performed, the unpleasant results of the operation have been greatly magnified.

"When the lens adheres in some parts of its surface to the iris; where the cornea is very flat, and the anterior chamber of the eye so much diminished, that the section of the cornea cannot be made sufficiently large to admit of the passage of the lens; where this tunic presents the appearance denominated *arcus senilis*, as the wound made under these circumstances never heals; where there is present a habitual contraction of the pupil, (*myosis*,) where the eyes are seated deep within the sockets, and the eyelids cannot be opened to a sufficient distance; where adhesion has formed between the iris and cornea;" and especially in the cataract of children, the operation of *division of the lens* is to be preferred.

Dr. Frick concludes his treatise with the diseases of the appendages of the eyes: but this review has been already too far extended to permit our noticing this part of his work. We cannot conclude these observations, without strongly recommending the diseases of the eye to the attention particularly of the junior members of the profession. There is no department of medicine which offers a

\* Travers's Synopsis of the Diseases of the Eye.

wider field for observation, or promises a richer harvest, to those who will cultivate it. To those who are entering upon the study, the work of Dr. Frick will be a most useful manual; it is moreover the first American work that has appeared on the subject, and as such is worthy of every encouragement.

H. I.

ART. XIV. *Dissertazione Medico-Forense riguardante la causa della Illmo. Sig. Achille Crespi accusato di Stupro immaturo. Autore Luigi Metaxà pubblica Professore di Anatomia e Medicina Comparativa nell' Archiginnasio Romana della Sapienza, &c.* Roma, 1824, Poggioli, 8vo. pp. 146.\*

IT is scarcely possible to imagine a more interesting case in the whole circle of medical jurisprudence, than the one treated of in the work before us; where a young man of excellent family and high character was accused and *condemned* for the perpetration of a rape on the person of a girl not yet arrived at the age of puberty. The young man being arrested on the accusation of the girl, an examination of the sexual organs of the plaintiff was made by three medical gentlemen and two midwives, who delivered the following report thereof: they found "the sexual organs *altered, tumid* and at the entrance of the vagina the *hymen* was *entirely wanting*; the whole of the vagina was *irritated, inflamed*, and of a deep red colour, but *particularly so* at the point of the frenulum. The vagina was dilated in such a manner, *that a finger could be introduced with every facility*, and lastly they had observed that there was a *copious* discharge of *purulent and sanguinolent matter*, by which according to their skill, knowledge and conscience, and on their respective oaths, &c. they conclude and *judge* that the aforesaid girl had suffered the

\* For the perusal of this work we are indebted to the politeness of that distinguished naturalist and accomplished scholar, Mr. CHARLES BONAPARTE.

introduction of some hard body, as a horn, the membrum virile, or some similar instrument; *that she is perfectly and recently deflowered*; and that the above mentioned flux, by its quantity and appearance might be derived from a mechanical injury, or actually from a gonorrhœa communicated."

A second and third examination induced them to confirm this opinion, and they concluded that the flux from the vagina had commenced about eight days before their first examination, and according to the oath of the girl, *immediately* after the rape. As the discharge had not yielded to the ordinary application of the antiphlogistic treatment they infer it was caused by a "syphilitic gonorrhœa." On these reports Crespi was condemned.

The work before us caused this sentence to be reversed, and is one of the best pieces of professional criticism that we have seen for a long time. The examination of the evidence, and of all the collateral circumstances; the close scrutiny of the sources of error in the opinions of the medical examiners; and the detection of all the facts that invalidate the accusation, are well worthy the attentive perusal of every one anxious to become acquainted with medical jurisprudence. We cannot present a better analysis of this interesting memoir than by giving a translation of the opinion delivered relative to it by a large number of distinguished Italian professors. It is not possible to avoid some scepticism relative to the *entire innocence* of the accused, as no attempt is made to rebut any other charge than that of the rape, but that the sentence was properly reversed in consequence of this investigation we are fully satisfied.

"We the undersigned, having separately read, and maturely examined the Medico-legal Dissertation, &c. of Professor Louis Metaxà, have found it reasonable, convincing, and most powerful in demonstrating the proposed object, and, therefore, have unanimously agreed in the following decision :

"The cause treated of, is reduced to two principal heads; to set aside the *rape*, and to demonstrate the pre-existence of *leucorrhœa* in the girl Vittoria Turchetti.



“The Dissertation of Professor Metaxà is divided into two parts; each part is subdivided into three chapters. In the first, after a brief introduction, he relates the most remarkable and authentic facts, connected and disposed according to the order in which they were presented; and hence shows how unreasonable, and contrary to the correct principles of science, and how injurious to the accused, were the legal proceedings that were the base and origin of the decision and condemnation.

“The first part of the second chapter treats of rape in general, and of the uncertainty of the signs of physical virginity, which he accurately distinguishes as physiological and anatomical; he shows that the want of the hymen and the dilatation of the vagina prove nothing, and that severe and fatal symptoms arise from a violent rape committed on a person not yet pubescent.

“He concludes that in rape in general, there are no infallible signs; but that when rape has been perpetrated on too young a subject, it leaves most marked and commonly indelible traces.

“In the first part of the third chapter he draws a judicious parallel between leucorrhœa and gonorrhœa. He treats chiefly of *hereditary*, *metastatic*, or *vicarious* leucorrhœa described by various modern medical authors, and shows how frequent and common the vicarious leucorrhœa of different species, especially the *scrofulous*, is among children, of which he refers to various examples. Relative to the difficulty of distinguishing between the two diseases, (leucorrhœa and gonorrhœa,) he observes there are two modes to decide properly between these discharges. The first consists in the difference of their sources; the *leucorrhœa* is constantly derived from the uterus; while the gonorrhœa does not extend farther than to the external organs; if it be washed off carefully, the place may be seen whence the gonorrhœal mucus flows; which supplies an argument to exclude the leucorrhœa, and the contrary. The second is presented by the difference of the succession of the periods, since the gonorrhœa invariably runs through its stages and

goes on decreasing from its inflammatory state to its decline ; the chronic habitual leucorrhœa derived from internal causes knows no periods, but increases and diminishes at indeterminate periods ; thus its essential and distinctive characteristic is irregularity and disorder. Finally, the fact of the state of *delitescence*, (or dormancy,) common to all contagious diseases, may, in many cases like this before us, aid us to avoid confounding one discharge with another.

“ He concludes that leucorrhœa in general, theoretically considered, does not differ from gonorrhœa ; but that in the present case its most evident characters, deduced from experience and from these *examinations*, were more than sufficient to prove that the discharge from this girl was leucorrhœal and not gonorrhœal ; moreover, the premature appearance and irregularity of the symptoms, exclude every suspicion of gonorrhœa, and demonstrate the pre-existence of *leucorrhœa*.

“ In the second part, he scrutinises with great rigour, in three distinct chapters, the professional examinations, and begins with that of the 20th of June, (the substance of which has been given,) the foundation of the whole decision. The medical examiners describe the contour of the hymen, after having stated that it was *not present* ; they suppose that the *frenulum* forms a part of it, and do not speak of the *carunculæ myrtiformes*—of most acute inflammation *without pain*—swelling, and dilatation, and facility of exploring the same parts contemporaneously—a declaration of rape in an immature female being complete, without rupture of the frenulum. This examination, besides being contradictory and irregular, is also, not slightly injurious from its animosity.

“ 1st. Because the examiners take on themselves to say more than was asked of them by the judge.

“ 2d. Because they refer to a single extrinsic cause the alteration of the sexual organs of the child.

“ 3d. Because they did not at least state the possibility that the discharge of the little girl pre-existed, might have been leucorrhœal, and might have corroded the other parts.

"The second chapter is occupied with a confutation of the examination of the 17th of July. The medico-jurists, in this new investigation, found nothing but slightly increased diameter in the orifice of the vagina, which now admitted the *thumb* instead of the *finger*. From such an irrelative difference they arbitrarily deduce :

"1st. The precise fixation of the day on which the rape was committed, and determine *thirty days* afterwards, what they were unable to establish eight days after the act.

"2d. The diameter of the male organ of the violator, which they say must be that of a person who has arrived at puberty.

"3d. The contagious nature of the two little drops found in the urethra of the accused.

"The third and last chapter of this second part relates to the third professional examination of the 28th of July, 1822. It is asserted in this, that the inflammation had ceased, and was reduced to a simple irritation; to this they add the pain, (which was not present till this time,) the constriction of the parts, (which, during the inflammation were dilated,) and the intolerance of every touch in the parts themselves, (which, at the former visits, admitted the finger and thumb with every facility.) From these circumstances these examiners conclude, that the discharge from the vagina, was *gonorrhœal*.\* They abstained from deciding on

\* There are some physicians who think that medico-jurists have no right to give "opinions" in a court of justice, a notion which is incorrect and hastily formed. They say the physician is to give nothing but "facts" to the court, as if the court or jury could decide whether a wound were necessarily or accidentally mortal, or were able to discover whether certain appearances were the result of the use of poisonous substances or were owing to incidental circumstances. The medico-jurist examines the "facts" solely with a view to make up an "opinion," and though he is called on by the court to relate all the "facts," it is upon his *inferences* therefrom, aided by the inferences of judicious men in similar cases, that the decision of the court is to be formed. If the court and jury were all well qualified professional medico-jurists, then they would need nothing but "*facts*;" in the present condition of things the physician is expected to know how to observe the "facts," in order that he may be able to give an available "*opinion*."



the nature of this discharge, at the second examination, we know not from what ill timed delicacy ; but as Crespi was accused of rape, the girl having a discharge from the vagina, and the fluid from Crespi being contagious, every one will perceive that the fluid from the girl ought to be equally communicable, because it was that itself which was communicated by Crespi.

“ From all these circumstances we are of opinion that the want of the hymen and the variable dilatation of the vagina do not in this case give any proof of rape committed on the immature female. That the hymen was absent does not show that it was lacerated, in which case the *carunculæ* myrtiformes ought to exist ; of these no mention is made. The vagina, besides not being generally of the same dimensions, does not show itself always dilated in the same degree ; thus in the first instance it admitted the index finger, at the second visit it received the thumb, and at the third it would not allow of the slightest touch. Notwithstanding this accusation of rape, (although the sufferer was not yet at the age of puberty, and it was violently perpetrated,) it was not followed by pain, nor hemorrhage, nor inability to move ; neither by laceration nor bruising, which is equally repugnant to experience and reason.\* In regard to the discharge from the vagina, the medico-jurists ought to have sought for its sources, and employed the measures necessary to discover whether it came from the internal or from the external organs. If they had accurately observed the irregular and inverse order with which the symptoms of the undetermined discharge succeeded each other, it would not have been incorrect for them to decide that it could not be *syphilitic* and *communicable*, since the gonorrhœa runs

\* Nihilominus nostro judicio, stuprum magna sine injuria vel partium dilaceratione perpetrari potest, præsertim in puellam debilem, et teneræ ætatis, leucorrhœa ægrotatam ; nam omnibus perbene cognitum est fæminas hunc morbum patientes, genitalia magnopere laxa et hiantia habere. Stuprator cujus sunt genitalia parva vel mediocria, lubricando et caute agendo, (tali etiam impubere puella, maximeque in animi deliquium) virgam intrmittere potest.

regularly through its stages, and presents no such anomalies. Finally, after having heard from the girl's own mouth, that immediately after the consummation of the act the discharge made its appearance, they should have had no doubt of its being *leucorrhœa*, because the "*syphilitic*" *gonorrhœa* is always preceded by the state of *delitescence* (or dormancy.) Such is our fixed decision without shadow of prejudice, animosity, or interest, which, for the sake of truth and the honour of Roman medicine, we have solemnly and unanimously published."

Signed by twenty-eight of the most distinguished Roman Professors and Physicians.

In addition to the examination of the fallacies of the accusants, Metaxà has brought forward testimony to prove, that the child was of a scrofulous habit, and had been suckled by a woman of exceedingly bad character, and at a very early age had suffered from *leucorrhœa*. Besides this, he has shown that the mother of the child had a hatred against the family, if not the person, of the defendant. The essay of METAXA is well worthy the attentive perusal of all who are anxious to become versed in the important and difficult science of medical jurisprudence, though we believe that in many respects his anxiety to establish his point, has made him give too much importance to some things, and attach too little value to others. ☉

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ART. XV. *Report made to the Institute of France, on the 22d of March, 1824, by Baron Percy and Chev. Chaussier, on a Memoir presented by M. Civiale, M. D. of the Faculty of Paris: entitled a New Method of destroying the Stone in the Bladder, without the operation of Lithotomy. Translated from the French, by R. LA ROCHE, M. D. Philadelphia, 1824.*

THE American medical public are much indebted to Dr. La Roche for the promptness with which he has made and

published his translation of this Report, which has excited a very lively degree of interest relative to the operation. The disease for which it was proposed is so painful, and the most approved mode of operating so formidable, that any thing like a plausible mode of removing the stone, without cutting, must be hailed with gratulation. At present we cannot do more than extract a description of the cases, referring the reader to the pamphlet itself for the statements of the arguments in its favour, the details of the operation, and the opinion of the committee of the Institute. No one should venture to pronounce on the subject who has not read this Report.

\* "CASE I.

"On the 13th of January last we proceeded to the house of Mr. Civile, where we met several physicians and surgeons of high reputation, such as Messrs. Larrey, Giraudy, Nauche, Sue, Sedillot, and others; and where also we found Mr. Gentil, thirty-two years of age, who had suffered for the last four years from a pretty large and hard stone, of the existence of which we assured ourselves by a decisive examination; and who, full of courage and resolution, anxiously waited the commencement of a trial from which he expected to escape safe and sound, and the chances of which he had carefully weighed before submitting himself to it, and giving it the preference over the ordinary operation.

"Having placed himself upon a small bed, and the stone being felt once more, Mr. Civile introduced down to it, and almost at the first attempt, the large straight catheter, having in its centre the forceps and lithonriptor. The urethra offered no resistance to the passage of this sound, previously lubricated with cerat, and the stone was seized immediately. Mr. Civile next proceeded to the trituration. Each stroke of the bow occasioned in the ears of the assistants a noise and cracking which indicated the hardness of a stone of oxalate of lime, and the promptness of its destruction. Three times the operator rested, and afforded respite to the patient, who experienced more uneasiness than real pain. After about forty minutes, Mr. Gentil left the bed alone, voided, together with a little urine, the water that had been injected into the bladder, and was much pleased to reject, at the same time, numerous pieces of the stone, which was estimated to have been reduced about one-third by this operation.

"The operation was again resorted to on the 24th of the same month, and we had the satisfaction to see at the house, besides



the witnesses before mentioned, our learned colleague Mr. Magendie, and Messrs. Serres and Aumont, whose names are so advantageously known. The breaking of the stone was continued, but was unattended by any circumstance worthy of remark.

"On the 3d of February following, the deliverance of Mr. Gentil from the stone was completed; there escaped from the washed bladder a larger quantity than ever of fragments and pulverised stone, which, when collected together, gave the approximate size of the calculus.

"A few baths and injections, and the use of a mild and mucilaginous drink, were the only auxiliaries to an operation, for each repetition of which Mr. Gentil walked to Mr. Civiale's, and which changed this young man, who for a long time was gloomy and suffering, into the most lively and happy of mortals.

"We have since seen Mr. Gentil several times, and have sounded him without discovering any thing. All in fact announces a perfect cure; excepting, however, the risk of a relapse, from which lithotomy itself does not preserve, and against which we can so much the less be assured, since in the operation of Mr. Civiale, the stone being minutely divided, it is easier for a fragment to remain in the bladder, and there become the nucleus of another calculus.

#### "CASE II.

"Mr. Laurent, of Reims, was sent to Mr. Civiale by Dr. Simons of that city, for the purpose of being operated upon for the stone, the nucleus of which was thought, agreeably to a declaration of the patient, which it would be superfluous and indiscrete to communicate here, to be a white bean. We accordingly assembled at the house of the patient on the 4th of February of the same year, accompanied by Mr. Souberbielle, a very experienced and distinguished lithotomist, who was led more by the desire of witnessing the success of the new method, than by the curiosity with which he was inspired. Some days before, Mr. Civiale had introduced into the urethra a flexible sound of small diameter, and gradually increased its size, in order to enlarge this canal, and render the introduction of the large sound of the stone breaker more easy. This last was introduced without difficulty, after we had assured ourselves of the existence of the calculus, which we judged to be of little hardness, and of the size of a large chesnut. The bow was now put in operation, and the foreign body soon cut into, without, however, occasioning any thing more than a hollow and sometimes very obscure sound. The bladder being very irritable and contractile, the operation was shortened, and repeated only on the 7th, after the application of some leeches, and the frequent use of emollient injections. In the interval, several small

pieces of friable stone, and a great quantity of saline earthy sediment, had made their escape. The result of the second operation was the rejection of some pieces of the broken calculus, and of two or three small masses of an animal viscous matter, which, when pressed between the fingers, gave the feeling of small and feebly agglutinated granulations.

"At a second meeting, which took place on the 10th, the forceps having seized something which appeared to possess little solidity and volume, it was discovered to be the bean that served as the nucleus of the stone. It was deprived of its incrustation, and presented a projecting portion, pretty large, and as fresh as when in full germination.

"A few days after, we assembled for the last time, with Drs. Souberbielle, Nauche, Delattre, &c. in order to terminate our undertaking. The large sound with the three branches brought away but small pieces, together with which a sort of membrane was extracted, which was at first mistaken for an empty hydatid, but afterwards recognised to be the pellicle of the bean. Dr. Souberbielle, having sounded the bladder in all directions with a common sound, announced the existence of another fragment, but porous, small, and easy to extract. In effect, this latter fragment, having advanced beyond the neck of the bladder, it was easily extracted by Mr. Civiale by means of the long pincer, called Hunter's, but which might as well be called Hales's, as this latter was the first who made mention of it.

"Laurent, quite freed from his stone, and full of joy and happiness, left Paris a few days after for Reims, from which place it is his intention to send us, through the medium of Dr. Simon, occasional intelligence of his health.

#### "CASE III.

"Mr. P. of Paris, has very recently offered himself as the subject of a third observation, not less conclusive than the two former. This young man having, himself, made some preparation for the operation, either by using occasionally hot baths, or by dilating the canal of the urethra with bougies of graduated diameters, submitted to it for the first time on the second of the month, in our presence, and under the eyes of Mr. Souberbielle and many of his colleagues. The stone being of the size of a pigeon's egg, or thereabouts, but of middling hardness, was seized and attacked with complete success. On the 5th, the calculus not having been discovered, this second trial had no success. Mr. Civiale having found it necessary to make use of a lithonriptor of larger size than that employed three days before, made a small incision at the mouth of the urethra; and by this means opened a free access to the instrument, which now acted with liberty and great force.

"On the 18th the third operation took place, and on that occasion Dr. Canin, ex-principal surgeon of the armies, Dr. Puzin, first surgeon of the body guards of Monsieur, the king's brother, and more than a dozen other equally enlightened and honourable witnesses were present.

"On this day, to introduce the lithonriptor, find and seize the calculus, although much diminished, and file a great portion of it away, was the work of a minute. Small agglomerations of gravel, and a great quantity of fine sand, comparable to that of cutlers, were rejected with the urine and injections. By means of the long pincers of Hales, three or four small packs of mucus, enveloping some calculous grains, were extracted. The cure was considered as nearly effected; and it was agreed that in a few days Mr. P. would be once more examined and sounded, and that in case some fragments of the stone which had escaped the last researches were found, they could be removed by means of injections, and if necessary, by the use of the pincers; an operation which he was far from apprehending.

"This third operation will soon be followed by many others, which have been decided upon; and soon a person of eminent name and merit will submit to it for the removal of the stone, which for a long time has occasioned the torment and misfortune of his life."

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ART. XVI. *Official Report of the Fever which appeared on board His Majesty's Ship Bann, on the Coast of Africa, and amongst the Detachment of Royal Marines, forming the garrison of the Island of Ascension, in the year 1823.* By WILLIAM BURNETT, M. D. &c. London, 1824. Burgess and Hill. pp. 78.

DR. BURNETT'S Report shows very clearly what he wishes to prove, that the yellow fever is not contagious, though he "thinks, in common with the fevers of other countries, it may and does, under peculiar circumstances, such as a great many sick being confined in a small, ill ventilated place, where due attention cannot be paid to cleanliness, &c. acquire the property of communicating itself to others."



The following sketch of the state of the frigate *Pyramus* is highly interesting :

“ The magnitude of the disease in the *Pyramus* may be conceived, when I mention, that two hundred and forty-nine men were taken ill on board, of whom thirty died, and one hundred and fifty-five were sent to the hospitals, principally to that of Antigua. Of one hundred and thirty-two sent to Antigua hospital thirty died—and of eighty-five sent to Barbadoes hospital thirteen died.

“ Notwithstanding this vast accumulation of sick, and such mortality in a single frigate, the crew of which amounted, on the 31st of October, to two hundred and sixty-one, not only the surgeon of the ship, but staff surgeon HARTLE, (to whose praiseworthy exertions she is so much indebted,) declare that nothing like contagion was seen ; they ascribe the disease as entirely arising from the state of the hold, and I believe with justice. Indeed, in the words of the latter gentleman, ‘ It would scarcely appear credible that four large mudboats of filth should be taken out of this frigate, which had only been six months from England, and I believe not long out of dock.’ But I must observe that this filth was entirely out of sight, below the timber boards ; for in other respects the ship was in the cleanest state possible.”

Although we think Dr. Burnett admits more in relation to the possible contagiousness of yellow fever under peculiar circumstances, than the facts he has related will bear him out in, we are much gratified with the candour and fairness of his Report. We hope that such reports, confirmed by almost universal experience, will before long extinguish the remains of that inveterate prejudice which has maintained the opinion of the contagiousness of yellow fever, in opposition to daily experience, ocular demonstration, and common sense.

E. O.

ART. XVII. *A System of Anatomical Plates, accompanied with Descriptions, and physiological, pathological, and surgical Observations.* By JOHN LIZARS, F. R. S. E. Published by D. Lizars and Co. Edinburgh, and H. C. Carey and I. Lea, Philadelphia.

FIVE numbers of this work have appeared, comprising the bones, muscles, blood-vessels and nerves. The plates are in folio, and each number is accompanied by a number in octavo of descriptions and observations. In the fifth number, two plates are given from the masterly dissections furnished for this purpose by Sir Astley Cooper, to whom the profession and the world at large are already deeply indebted, for services of the most important nature.

These plates are worthy of much commendation, for their general truth and correctness of representation. They will serve as excellent memoranda to those who have removed to a distance from the opportunities of studying anatomy, and may be consulted with great advantage by any one who wishes to renew in his memory the general character of the different parts of the body. To those who are not disposed to study anatomy technically, and are nevertheless solicitous to form an acquaintance with the structure of the human system, these plates will afford a most important and valuable assistance.

We should esteem it a poor compliment to Mr. Lizars to indulge in the extravagant and indiscriminate panegyric which has been poured forth on his work in England and Scotland; because this kind of commendation amounts to nothing but an expression of the writer's good will. The plates are generally good—several of them excellent—and a few of them are very poor indeed. The best of them, however, cannot bear the scrutiny of a thoroughly practised anatomist in *all points*, as indeed few similar works can, which have yet fallen under our inspection. But allowing for the imperfections inevitably attendant on

a work of such extent and magnitude, we consider it as a most valuable offering to the profession, and decidedly superior to any thing of the kind which has, within our knowledge, emanated from Edinburgh.

The descriptions are concise and perspicuous, if we except the use of the nomenclature of Dr. BARCLAY, which has never been adopted generally enough to be acceptable out of the city in which he resided. At present we wish only to express our opinion of the plates, and shall consider the text hereafter, when we present a general review of the existing condition of ANATOMICAL SCIENCE.

S. A.



## MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

## ANATOMY AND PHYSIOLOGY.

*Physiological Metamorphoses.\**—We well remember the time, (some half a century ago,) when the transformations of Ovid claimed no small share of our credence. We entertained little doubt that Actæon had been devoured by his own dogs—and it was manifest that the watchful eyes of Argus adorned the gaudy tail of the peacock. It is true, these airy fictions too soon faded before the light of dull reality—and we had little hope that, in our old age, physiological metamorphoses would rival those of the fanciful Naso. Such, however, is the fact. We have seen the tooth of carnivorous man take root in the head of the grain-eating cock—the “brawny part of porter’s bum” elevated to the loftiest feature of the “human face sublime”—the blood of a sheep circulating in the veins of a citizen—and now, the whole animal creation changing their hides, hairs, and feathers, as readily as Harlequin changes dresses in a pantomime. Dr. Dieffenback has been *usefully* employed for many years past in experiments on “*the transplantation of parts of the body from one animal to another.*” Before hazarding any speculation on the grand results which may be expected from these experiments, we shall give a short catalogue of the principal transplantations, referring to Graef’s Journal for the details. In the first experiment, the feathers of a *black* chicken were transplanted into the neck, back, tail, &c. of a *white* pigeon. In the second, there was retaliation, as the pigeon’s plumes were made to adorn the chicken. In the *third series of experiments*, the feathers of fowls, pigeons, sparrows, &c. were dibbled (by means of a trochar) into the backs and sides of puppies and rabbits. In the *fourth series*, the bristles of cats and wild rabbits were planted in the skins of pigeons. In the *fifth experiment*, a bunch of feathers was cut from the back of a pigeon, within an inch of the skin—a needle was then pushed down through each stump till the bird showed symptoms of

\* Experiments on the Transplantation of Animal Substances. By Dr. Dieffenback, of Berlin.

displeasure—the bristles of a kitten were then introduced into the stumps—took root there, and flourished luxuriously. *Sixthly.* The bristles of a cat and a dog were successfully engrafted on the back of a rabbit. *Seventhly.* The hairs of a friend's eyebrows were transplanted to, and took root in, Dr. Dieffenback's arm. *Eighth experiment.* A claw from a pigeon's toe was transferred to his tail. It did not stay there, but it deposited an egg—at least a very fine *new* claw sprouted out from the same place. Sometime afterwards the feather which had been plucked out to make room for the claw, grew again, and a furious contest took place between the indigenous and exotic plants—victory at length deciding in favour of the former. *Ninth experiment.* A pigeon's head was scalped, leaving the pericranium on. A flap from the inner part of a pig's thigh, was fitted to the wound, and secured by sutures. It made an excellent scalp, and was soon crowned with a fine grove of bristles. *Tenth experiment.* The nose of a wild rabbit was cut off, and then sewed on again, where it grew as firm as ever.

We do not suppose that any one can be so insensible to the merits of these experiments as to start the rude question—*cui bono?* It is impossible to say what may *not* be the stupendous results to which they may ultimately lead. We shall expect to see the green fat of a turtle transplanted to the thorny back of the skate—and the humble rumps of our barn door fowls sending forth the elegant plumage of the bird of Paradise. The scalping knife of the Indian has lost its terrors. New *scalps* of any size or colour may be readily procured and fitted on, at the nearest friendly *wigwam*. Lastly, by a very trifling operation, to which the ladies will readily submit, Circassian eyebrows, Grecian noses, and ruby lips, will be as easily and effectually supplied by the experimental physiologist as any other article of headdress by the milliner.—*London Medico-Chirurgical Review, Sept. 1824.*

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*Physiology of the Nerves.*—In corroboration of the doctrine of Bell and Magendie respecting the nerves of sense and motion, the following physiologico-pathological fact deserves record. A horse became lame of the right hinder extremity on the 27th of May, 1823, which lameness disappeared in a few days. He was therefore put to work, but, after half an hour's exercise, he was covered with perspiration—could hardly support himself on his legs—and soon feel down, his hinder extremities being completely paralytic. But it was found, that sensibility was as entire in these as in the fore legs or other parts of the body. He died the next day, and was carefully examined by M. Buley, veterinary surgeon of Paris. The inferior (corresponding in man to anterior) portion of spinal

marrow was found softened and diffuent. The superior (posterior) portion presented no morbid appearance. The pulp of the lumbar and inferior sacral nerves was wanting in consistence—and their envelopes were red and inflamed. We consider this as a very satisfactory confirmation of the doctrine of Mr. Bell.

In an accident which happened to a horse, under the same veterinary surgeon, by which the facial nerve was divided, the curious phenomena and the novel doctrines of Mr. Charles Bell respecting the nerves of the face were also confirmed.—*Ibid.*

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*Case of Menstruation from the Mammæ.*—M. Buttner, a practitioner at Halberstadt, has recently published a case of this kind. It occurred in an hysterical woman, who experienced the ordinary symptoms of menstruation, which went off after she had evacuated five or six spoonfuls of sanguineous fluid by the nipples. This process usually lasted about six days, and was succeeded by a white mucous discharge from the same parts; which however were, during the whole time, neither swelled nor painful.—*Journal der Praktischen Heilkunde*, Junius.

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## SURGERY.

*Stricture of the Urethra.\**—Mr. Shaw does not attempt to embrace, in this paper, all the effects of stricture, but confines himself to the following four pathological facts.

“1st.—I have not,” says he, “in more than a hundred dissections which I have made of diseases of the urethra, seen a stricture or narrowing of the canal, posterior to the ligament of the bulb; nor have I been able to find one example of stricture beyond this part among those preserved in the College Museum.

“2d.—In almost every instance where a narrow stricture has existed for some time, in any part of the urethra anterior to the ligament of the bulb, I have found the membranous and prostatic portions dilated to three or four times their natural size.

“3d.—The ducts of the prostate, which are naturally very small, are always more or less enlarged when there has been a stricture or long continued irritation of the canal.

“4th.—When such a stricture as causes occasional retention of urine has existed for some years, the bladder is

\* On the Effects of Stricture of the Urethra, particularly of the sacculated state of the bladder, with an inquiry into a mode of treatment to avert this latter consequence of stricture, which is often fatal. By JOHN SHAW, Esq.—*Med. Chir. Trans.* Vol. XII.



found to be not only thickened, but often at the same time sacculated."

If the first three observations be correct, some practical rules may be deduced from them. Thus, if in passing down an instrument, we meet with obstruction *posterior* to the ligament of the bulb, we ought not to impute it to stricture of the passage, but to some other cause, not removable by the means employed for stricture. In respect to the second observation, that the membranous and prostatic parts of the urethra become enlarged in consequence of stricture; if such be the case, it will be admitted that obstruction to the bougie posterior to the bulb, in a patient who has previously had stricture anterior to it, will render it improbable that such obstruction results from narrowness or stricture of the canal. The rule to be deduced from these observations is, that on feeling an obstruction posterior to the ligament of the bulb, we should not persevere in the attempt to push the instrument further in. It is probable, in such cases, that the point of the instrument is entangled in one of the dilated ducts, in which case, any attempt to force the catheter into the bladder may probably form a false passage. If the catheter enters into one of the enlarged ducts, Mr. Shaw observes, it may be pushed through the prostate into the back part of the dilated bladder, several preparations of which accident are in the collection in Windmill Street. These observations, he thinks, are necessary when, even in the present day, the authority of Dessault is given for using forcible means to overcome obstructions on the prostate part of the urethra.

Our author next adverts to the anatomy of the parts, and shows that from the sudden narrowing of the canal at the bulb, and the curve which it naturally takes there, the mechanical impediments to the introduction of an instrument, at this point, are greater than at any other.

"If to these impediments we add the difficulty occasioned in the living body by the contraction of the muscles which surround this part of the urethra, and which is always excited by a slight inflammation of the membrane, we shall understand how the spasmodic affection, which comes on the moment a bougie touches the inflamed part, combined with what I have called the mechanical difficulties, may produce so complete an obstruction to the entry of an instrument, as to give rise to the idea of the presence of stricture."

Error may be increased on these occasions, by seeing a cut or indentation on the bougie, caused by pressure against the lower edge of the ligament exactly resembling that which is considered as unequivocal proof of stricture. So much delusion has indeed prevailed respecting the existence of stricture, that we are not much surprised at the histories which are publish-

ed of sudden cures of narrow strictures at the bulb, by bleeding, antispasmodics, &c. It is also not improbable, as Mr. Shaw observes, that actual strictures at the bulb have originated in the inflammation consequent upon the ineffectual attempts to pass an instrument through this part of the urethra, while its lining membrane was in a state of irritation.

In respect to the sacculated state of the bladder, it is observed by all who are in the habit of examining the urinary organs after death, that this condition is a very common occurrence where stricture has existed. Although our author is unable to point out any particular diagnostic symptom, by which the sacculated state of the bladder can be known during life, yet he ventures "the opinion that, when in severe cases of stricture there is a peculiar irritation about the back part of the bladder, and between it and the rectum, especially after voiding urine, we may suspect that a sac has formed."

The questions then occur—is such a sac ever spontaneously removed? Will not a quantity urine lodge there?—and what will be the consequence of such lodgment?—The *first* question Mr. Shaw thinks, can never be answered with certainty—the *second*, he fears must be answered in the affirmative—and, as to the *third*, and most important, he would be inclined to say, that "the lodgment of urine in a sac produces a very peculiar train of symptoms, constituting a disease that is often fatal, the patient's death being occasionally preceded by symptoms of peritonitis." Mr. Shaw has also observed that the sufferings of the patient are of a nature very different from what are considered the more common consequences of stricture.

There is reason also to fear that these lodgments of urine in sacs of the bladder may cause the formation of calculi there. Another consequence, scarcely alluded to by authors, is a fistulous communication between the rectum and bladder, sometimes resulting from the formation of a sac in the bladder—more usually from a sacculated state of the prostate. Both of these have their origin, generally, in stricture. The important fact, too, must not be overlooked, that the prostate itself is very liable to become sacculated, even without the presence of stricture. The next object of inquiry is, can we avert the above mentioned consequences of obstructed urethra?

Suppose a patient has had stricture near the bulb for several years, which has resisted every plan of treatment, and now will not permit the passage of the smallest bougie. The patient has frequent attacks of inflammation of the bladder, and the water dribbles away slowly, or is passed guttatim. The usual means, we say, having failed, what can we hope for but a supuration in the perineum, and a fistulous opening for the water, as the most favourable issue, bad as it is? In the state above

described, it is evident that (while the obstruction continues) the patient is daily liable to complete retention of urine, from catching cold, or any irregularity.

“If this should happen, what must be the consequence? The state of the stricture is such, that neither a catheter nor a bougie can be passed; therefore, if the patient be not immediately relieved, and this with great care, by cutting into the perineum, or by puncturing the bladder, he must either die of the irritation caused by the distended bladder, or the urethra will burst behind the stricture, and the urine necessarily in a highly acrid state, be effused into the scrotum. If this last should be the result (which it too commonly is in such cases) and if the patient be not then treated with skill and decision he will probably die in the course of three days; or, should he escape the immediate danger, he will run much hazard of sinking under the extensive sloughing of the scrotum and penis, which almost invariably follows rupture of the urethra, when a free passage for the evacuation of the effused urine has not been made.”

Even if things do not go the above length, from complete retention, yet the constant state of irritation in which the bladder is kept, will either lead to irritative fever of a dangerous and wasting kind, or induce a disorganized or sacculated state of the prostate gland, or of the bladder itself, under which the patient will ultimately sink. What is to be done, Mr. Shaw asks? Should a catheter be forced through the stricture, or should the bladder be punctured? The first is decidedly wrong, he avers, because the contracted portion of urethra is probably much firmer and stronger than any other part of the canal. Puncturing the bladder would be infinitely safer, but it would give only temporary relief.

Mr. Shaw proposes an operation, then, which is not severe, nor attended with danger, if properly performed—which will not only give temporary relief, but also put the patient into a condition of much greater ease and comfort than could be expected. The operation “*is merely to cut through the stricture, to introduce a catheter from the glans, and endeavour to make the urethra entire—by allowing the wound to granulate over the catheter.*” It is to be remembered that this operation is not proposed for the spur of the moment, when the patient is in danger from retention of urine. It is to be performed before things come this length, and before danger is so imminent. The only difficulty, Mr. Shaw remarks, likely to occur in the first stage of such an operation is, the chance of the point of the catheter getting into one of the false passages, when passing it down to the stricture, as a mark for our incision into the urethra. In the second stage of the operation, we may have some difficulty



in discovering the opening of the urethra, after the stricture is cut through, for there may be false passages continued even beyond the point of stricture—or the urethra, by its elasticity, may be so close that we cannot see it. These difficulties have occurred in one or two cases, but are surmounted by observing the point from which the urine issued. For this purpose the urine ought to be retained for some time previously to the operation. If this cannot be done, we are to desist from prosecuting the operation till the bladder again fills, when we are to narrowly watch the issue of the stream, and pass a catheter through the opening into the bladder. It is scarcely necessary to add that, after the wound is healed over the catheter, the urethra must, for a considerable time, be kept free by the use of the bougie. The worst evil that could befall this operation would be the non-closure of the wound—in other words, a fistulous opening in perineo. But even *this* is the best accident that could befall the patient, if the operation were not performed. Again, the fistula, after operation, would differ materially from a spontaneous one. Thus the stricture would be removed, which is the first step towards the cure of fistula, and there would be only a simple wound in place of the multitude of callous sinuses which take place in spontaneous fistula. Our author concludes by recommending the early performance of such an operation, before the parts get disorganized and hardened. He has lately seen a patient on whom this operation was performed, and his appearance was so much altered for the better, that he scarcely recognized him. Previous to the operation he was so reduced by constant irritation, that he appeared like a broken down man of sixty—but now he is a hale and strong looking man.

[This operation was proposed and practised in many instances, with full success, by Dr. H. G. JAMESON, of Baltimore, nearly a year anterior to this proposition of Mr. Shaw.

EDITOR.]

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### MIDWIFERY.

*Statements relative to the Lying-in Hospital at Florence.*—Dr. Bigeschi, giving an account of the establishment and internal economy of this hospital, which was opened in June, 1816, informs us, that, up to the end of March, 1824, five hundred women had been delivered in this hospital; four only having died during this period. The number of children born was 506, there being six instances of twins: of this number, 485 were head presentations; the males were 279, the females 227. Three hundred were delivered during the day, two hundred in the night, and twenty-one before the usual term of gestation. Of the whole number, three only presented any defect of forma-

tion; two having hare-lips and cleft palates, and one having a malformation of the fingers of both hands, similar to the mother. The heaviest infant weighed sixteen pounds\* four ounces, and the smallest, born at the full period, five pounds; the majority weighed about ten pounds. Of the 506 children born, forty-nine perished; of these, thirteen were still-born; the others died of infantile diseases, within the first few days. In those born before the natural period, the greatest length of the fœtus was always found to be between the umbilicus and the top of the head.

The disease called induration of the cellular tissue attracted Dr. Bigeschi's particular attention. He observed it to be prevalent in the winter, especially if rigorous; in consequence of which, he ordered the infant to be kept in the mother's bed, as warm as possible, and from that time no case of the disease occurred.

Of 486 head presentations, three were extracted by means of the forceps; neither the children nor the mothers suffering any thing therefrom.

Of the four deaths, the first was occasioned by inflammation of the uterus. In consequence of malformation of the pelvis, the child was turned, with the intention of delivering by the feet, but the head being too large to pass, it was necessary to turn it, and it was finally extracted dead. In the second case, the child was delivered by the feet; and the mother, a woman thirty-one years of age, of a sanguine temperament, was seized with symptoms of inflammation of the kidneys the day after, and died on the seventeenth day of the disease: the left kidney, the spleen, and part of the lung of the left side, were found in a state of suppuration; the uterus being in a perfectly sound condition. It is remarkable that this woman had been affected, subsequent to a former labour, with symptoms indicative of the above affections; from which she did not recover for two months. The third death was occasioned by hemorrhage; the woman eight months advanced in pregnancy; the placenta was found adherent to the neck of the uterus. The head presented; the child was turned and delivered by the feet. Every thing was conducted in the gentlest manner; but the child was still-born. The uterus contracted properly; the placenta was extracted immediately; but the patient, who had swooned at the conclusion of the operation, expired an hour after. The other patient died of puerperal fever, on the fifth day. There was nothing remarkable or preternatural in the previous labour. Dr. Bigeschi adds some observations, confirmatory of the virtues of the *secale cornutum*.—*Lond. Med. and Phys. Jour.*

\* The Tuscan weight of twelve ounces.

*On the Method of counteracting Uterine Hemorrhage, proposed by Dr. Gooch.*—Since the publication of Dr. Gooch's paper, (12th volume of the Medico-Chirurgical Transactions,) on the Hemorrhage which sometimes follows the expulsion of the placenta and the contraction of the uterus, I have had an opportunity, (says Mr. Crowfoot,) in three cases, of witnessing the good effects of the preventive treatment which he recommends.

Mrs. G., in three previous labours, had suffered from a frightful hemorrhage, which followed the expulsion of the placenta, after an interval, varying in the different labours, of from five to twenty minutes, notwithstanding the uterus had actively contracted. This patient having been again pregnant, I determined to try strict antiphlogistic treatment for five or six weeks prior to her confinement. The consequence was, that she altogether escaped the hemorrhage.

Mrs. A., a lady of sanguine temperament, but delicate constitution, in her two first labours had rather more than the usual discharge after the removal of the placenta. In her third labour, the placenta was expelled as usual, the uterus actively contracted, and no hemorrhage followed for at least twenty minutes, when a most appalling one burst forth, and was with difficulty restrained by the most prompt and continued treatment. In her fourth pregnancy, the antiphlogistic treatment was pursued as in the former case, and with the same satisfactory result.

In another patient, Mrs. L., similar hemorrhages had occurred in two previous labours: in a third pregnancy, the antiphlogistic treatment prevented this inconvenience in the following labour.

In none of these cases did the hemorrhage immediately follow the expulsion of the placenta; an interval of from five to twenty minutes intervened; and I therefore infer, that a degree of relaxation of the uterus preceded the hemorrhage, and was as essential as the existence of the phlogistic diathesis. We find that the only remedies upon which we can depend in these cases, are such as have a tendency to produce a firmer contraction of the organ,—the sudden application of cold to the abdomen, steady pressure externally on the uterus, and the introduction of the hand into its cavity. Dr. Gooch found that Le Roux's remedy could not be relied on; and the case which I detailed first, in which alarming hemorrhage took place, into an uterus distended by a seven-months fœtus and its appendages, would indispose one to trust to the plugging the vagina as a means of restraining a bleeding into a dilatable organ.—*Edinburgh Med. and Surg. Journal.*

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*Ascites in Pregnancy.*—Mr. Langstaff (Med. Chir. Trans. v. xii.) has related an interesting case of this kind, which, in a



practical point of view, must be considered valuable to accoucheurs.

A lady in her ninth pregnancy, and in the thirty-ninth year of her age, appeared unusually large, and felt uncomfortable and listless, at an early period of utero-gestation. At the period of quickening, the abdominal enlargement was very remarkable. In the beginning of the seventh month, the abdominal pain and distention were so distressing as to demand local and general blood-letting, blistering, &c. The extremities became œdematous, and fluctuation was perceptible in the abdomen, but not in all parts alike, being more evident in the hypochondria, particularly the right. Calomel, digitalis, and squills were employed without effect, and the dropsical symptoms became so urgent as to threaten the life of the patient. In consultation, Dr. Farre gave it as his opinion that the induction of premature labour was preferable to paracentesis abdominis. Dr. Davis came to the same decision. Accordingly, on the 14th of March, the liquor amnii was let off. It was small in quantity. On the following day, the dropsical symptoms were more distressing than ever, and there were no signs of approaching labour. Mr. Langstaff was therefore induced to perforate the peritoneum about two inches below the umbilicus, with a moderate sized trochar. When about ten pints of transparent fluid were drawn off, the stream was checked by the uterus coming against the canula. This was obliged to be withdrawn, and an elastic gum catheter introduced in lieu, by which fifteen pints more were abstracted. Eight hours after the operation, pain was complained of over the whole abdomen, with restlessness, hot skin, quick pulse. Twenty-four ounces of blood were drawn from the arm, and was remarkably inflamed—saline aperients—five grains of calomel with the same quantity of hyoscyamus, at bed time. 21st. Bowels freely relieved—the symptoms of pyrexia and irritation the same—pulse one hundred, full and hard—urine high coloured—pain in the abdomen. Twenty leeches to the abdomen, and much discharge of blood. 22d. Pain and tenderness continue, although the bowels are free, and the urine increased in quantity. Pulse one hundred and ten, fuller and harder—tongue very white and dry. Thirty ounces of blood from the arm, more inflamed than ever. Saline medicines, with digitalis and fifteen drops of *liq. opii sedat.* at bed time. 23d. All the symptoms ameliorated. Towards evening of this day, uterine pains came on, and the lady was delivered of a dead fœtus about four hours after the commencement of labour. The child did not appear to have advanced beyond the seventh month, and, from the appearances which it presented, must have been dead for several days. From this

time every thing went on well, and no re-accumulation of water in the abdomen took place.

Mr. Langstaff, during the treatment of this case, was not able to obtain any satisfactory advice from men or books respecting the propriety of tapping. Denman decidedly sets his face against this measure. But the urgency of the case under Mr. Langstaff fairly authorised the operator, for death must have very soon taken place, had the water not been drawn off.

Professor Scarpa too, has published a memoir on this subject, and related a case successfully treated by paracentesis abdominis. The patient was thirty years of age, in her fifth pregnancy. Previously to utero-gestation she complained of constant obtuse pain in the whole circumference of the abdomen, and still more distressing pain in the loins, for which she had been bled by her surgeon to an exorbitant extent. The abdomen increased in size with extraordinary rapidity, so that in the fifth month of utero gestation, the patient appeared as if at the end of her pregnancy. Diuretics proved ineffectual. At the beginning of the sixth month the tumefaction of the inferior extremities, and the distention of the abdomen caused excessive dyspnœa, with frequent faintings, inability to lie down, want of appetite, loss of rest—in short, she was driven to the point of death.

In this state, Scarpa visited her, and found the abdominal integuments livid and extenuated—the umbilicus prominent—the hypogastric region tumid and greatly elevated—the inferior extremities swollen and threatening to burst—fluctuation evident in some parts of the abdomen, though obscure in others. The imminent danger of suffocation determined Scarpa to perform paracentesis abdominis. The trochar was introduced between the edge of the rectus muscle and that of the false ribs, on the left side, when a limpid and inodorous fluid escaped, in a continued stream, to the amount of nearly thirty pints. The respiration became more free, and the patient's feelings were relieved. She fell into a sleep of three hours' duration. In the course of the following night, labour pains came on—the membranes broke—and it was computed by the attendants that fifteen pints of liquor amnii came away! Two fœtuses were expelled, and died in a few seconds. On the fourteenth day, the patient rose from bed, and resumed her domestic employments. She afterwards enjoyed excellent health.

In addition to the authority of Scarpa, Mr. Langstaff might have found another sanction for the operation he performed, in the erudite article "*GROSSESSE*," vol. xix. of the *Dict. des Sciences Medicales*, written by M. Marc. We shall quote a short passage from it. "*Cependant, si l'hydropisie qui complique la*

*grossesse est assez considerable pour menacer la femme de suffocation, on ne doit pas différer de pratiquer la paracentèse."* P. 459.

There is a passage in Scarpa's Memoir which arrested our attention, and we shall here extract it, as translated in the first volume of the Journal of Foreign Medicine, page 254.

"As for *acute* ascites, it is undoubted that the artificial and complete evacuation of the fluid contributes powerfully to re-establish the equilibrium between the exhalent and absorbent systems of the abdomen, as well as to excite the action of the secreting urinary organs. I have had frequent occasion to confirm the truth of this important point of practice in cases of *acute* ascites in children after measles, and in puerperal women, in consequence of peritonitis."

A remarkable confirmation of the above came under our notice about eighteen months ago. A man of intemperate habits, and addicted to opium as well as inebriety, became affected with chronic hepatitis, as evinced by fulness and tenderness in the right hypochondrium, clay coloured stools, scanty and lateritious urine, yellowness and sallowness of the countenance, &c. These symptoms could not be removed by the usual alteratives and common modes of treatment. There now supervened pain and tenderness over the whole abdomen, with fever, white tongue, thirst, and extreme paucity of urine. Leeches, general bleeding, aperients, diuretics, all failed, and dropsical effusion took place to a great extent, accompanied by the most distressing pains over the whole peritoneum, so that the patient could get no sleep or rest, by day or by night. Under these circumstances, we directed him to be tapped in the linea alba, and about twenty pints of straw coloured fluid were discharged. He immediately fell into a profound sleep, which lasted many hours. Diuretics and alteratives, which had no effect previously, now produced a copious discharge of urine, and from that time till this—more than twelve months—no return of dropsy has taken place. It is a curious circumstance, however, that the cellular and adipose membrane of the lower extremities, which formerly had been œdematous, is now of extreme hardness, so as to be like so much dense and solid wood. His limbs are considerably larger in circumference than naturally, but he appears to suffer no inconvenience from this state. The integuments of the abdomen are also becoming indurated. He takes opium three times a day—about two grains each time.—*London Medico-Chirurgical Review, September, 1824.*

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*Sudden Delivery.*—Several cases of this kind have lately excited the attention of medico-legal writers, in this country. A remarkable instance, of a similar nature, recently occurred at Arras, in France. A woman, twenty-two years of age, and in



the last month of pregnancy, was taken with some pain in the bowels, and thinking she was going to have a stool, repaired to the "*garde-robe*." It was in the night. She had scarcely sat down, when her infant was born, without any pain, or the least notice, and fell into the privy below! She knew nothing of what had happened, till she heard the cries of the child. The alarm was given; but it was three hours before the infant could be liberated from its dreadful abode! It was apparently lifeless, and though, by the usual means, respiration was restored for a few minutes, yet life could not be preserved.—*ib.*

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*The Turn of Life.*—The cessation of the catamenial evacuation is always regarded with a degree of dread by the female sex—especially if they happen to be affected, for some years previously, with any chronic complaint. But, even if their health be ever so good, they have a secret apprehension of the critical period—an apprehension which has, in all ages, been fostered by medical authority and observation. In these days of scrutiny and scepticism, the "turn of life" has been made the subject of inquiry, by M. de Chateauneuf, and the result is not in favour of the popular opinion—or, as it will now be called, *prejudice*. This author grounds his memoir on tables of mortality, furnished by the most respectable authorities, from which he draws the following conclusions. Between the 43d and 60th degrees of north latitude, and over a space extending from Marseilles to St. Petersburg, the most accurate and authentic tables of records show no other increase of mortality in females, from the age of thirty to seventy, than what necessarily results from the progress or decline of life.

At all periods within the above range, there is, in fact, according to the said tables, a greater mortality among men than women—especially between the age of forty and fifty years—hence the "turn of life," or we will say, the 45th year, is a more critical period for the lords of the creation than for the ladies.

On these calculations and tables, we can only remark that, although they appear to prove that the general ratio of mortality among women is not increased by the turn of life, yet they do not prove that the cessation of the catamenia is unproductive of danger, and, in many instances, of death. It ought to be recollected, that the "turn of life" brings with it an immunity from some dangers, as child-bearing, for instance, and therefore, although the *general rule* of mortality may not be influenced by this epoch, the *kind of death* may vary. If, for example, as many women die, after the age of forty, in consequence of the "turn of life," as there died before that age, of child-bearing, the ratio of mortality would not be altered, and yet it would be quite certain that the critical period was a period of danger.—*ib.*

## THEORY AND PRACTICE OF MEDICINE AND MATERIA MEDICA.

*Belladonna employed as a Preventive of Scarlatina.*—There is no kind of knowledge which confers more honour upon the medical art, than that by which we are enabled to prevent the occurrence of disease. Every attempt that is made to achieve so noble, so philanthropic an object, should be deliberately and philosophically examined. By many practitioners, in Germany, belladonna is supposed to possess the singular power of preventing scarlet fever. It had been observed by Dr. Hahne-mann, that very small doses of this drug produced symptoms analogous to those of scarlatina, and he was led to the hope that it might prove an antidote to the disease. Upon this highly important subject, Professor Koreff has addressed a letter to M. Laennec; the opinion, he maintains, is supported by the observation of sixteen years.\* “Observation clearly proves,” he says, “that the belladonna, taken for some time, either in powder or in extract, produces, especially in infants, a redness of the skin, which is sometimes transient, at others more durable. Dryness of the mouth, with a sensation of heat in the throat, dilatation of the pupil, anxiety; occasionally swelling of the sub-maxillary glands: symptoms having a great resemblance to those which accompany the eruption of scarlatina.

“The effect of the belladonna has also this, in common with scarlatina, that neither of them produces the redness of the skin invariably, whilst the symptoms about the throat are always present. It was not till I had received the authority of the celebrated Sæmmering, who informed me that he had obtained the most satisfactory results with it, when the disease raged epidemically, that I determined to employ it.

“This malady, accompanied by the most unfavourable symptoms, and having entirely changed its usual character, was, at that time, producing ravages almost as fatal as the contagious typhus. I then, for the first time, had to protect from this dreadful contagion almost all those who took the belladonna with a little perseverance, and of these there were many thousands.

“Since that time, I never lost sight of the discovery, which becomes the more valuable as the scarlatina has increased during the last thirty years, both in violence and extent, in many countries, and I have always found the same effects in different climates, and in epidemics of opposite characters. Many other physicians have equally confirmed the preventive powers of this plant, and the German journals are daily filled with proofs of a

\* Sur l'Emploi de la Belladone contre la Contagion de la Scarlatine.—*Bulletin des Sciences Medicales, Avril, 1824.*

benefit, which, with respect to some countries, equals that of vaccination. In France, the capital and provinces of which appear less subject to these fatal epidemics, than Germany, Switzerland, &c. less attention has been given to this discovery, and it has been rejected—it must be said, too lightly, and without any sufficient examination, as may be seen in the article *Belladonna*, in the *Dict. des Sc. Med.* I only remember a single observation upon this important subject, by Dr. Meglin, who gives an account of a trial which he gave to this preservative, during an epidemic of scarlatina, at Colmar, and which confirms all the assertions of the German physicians. The absence of present danger is, perhaps, the cause of this indifference towards a discovery which, important in itself, might also be fruitful in results applicable to other diseases. At present, however, I shall confine myself to an account of the results which have been ascertained by repeated observations, and by a great number of individuals placed in very different circumstances, without incurring the reproach of having proceeded in a manner not sufficiently rigorous. The powder mixed with sugar, or the extract carefully made from the juice of the recent plant, are employed after the following formulæ. Extract of belladonna, three grains, dissolved in an ounce of cinnamon water. Powder or root of belladonna, two grains mixed with ten drachms of white sugar, divided into sixty doses. From half a dose to a whole one is given to a child, from six months to two years old, four times a day. To children from three to six years old, from a dose to one and a half. To those from six to nine, two to and a half. To those from ten to twelve, three to four and a half. Of the solution, a drop is given for every year of the child's age, once a day, and fasting. Observation has shown, that when the epidemic is very fatal, or the intercourse with the patients very frequent and intimate, it is prudent to increase the dose a little. It has not yet been possible to determine, in a satisfactory manner, the length of time which is necessary to eradicate, by this remedy, the susceptibility of the contagion. Every thing leads us to believe that the remedy, if used during a time too short to ward off the contagion, moderates very much the malignity of the disease. We know, for certain, that the remedy does not permanently overcome the disposition to scarlatina; and it is necessary to resume its use on every recurrence of an epidemic. We have always observed that the most intimate communication with the sick does not produce the disease, provided the medicine has been employed eight or nine times previous to being exposed to the contagion, and continued up to the period of desquamation: a circumstance very important to nurses. It appears more certain, to begin with rather strong doses, in order to



guard against the first impression of the contagion, and to diminish the quantity after a few days. No sensible effect has been observed to follow the continued use of this small quantity of belladonna. Up to the present time, neither season nor locality, nor any other circumstance, has appeared to diminish the preservative effect of this plant."

To us, the above facts do not appear very extraordinary. We know that, with few exceptions, two diseases will not go on in the same body at the same time. What is the effect of medicine but a disease? If then, from the use of a particular remedy, local and constitutional symptoms were produced, similar to those of scarlatina, we should certainly have imagined, without being in possession of the above statement of the German practitioner, that during the continuance of those symptoms, scarlatina would be very unlikely to take place. There are many well known analogous facts, which will immediately occur to the minds of our readers, and upon which we need not dwell, to prove the infrequency with which two different morbid actions proceed simultaneously in the same patient. In this country, it is true, scarlatina is generally a mild disease. We may, however, be visited with severe and fatal epidemics, which would render necessary a trial of the plan proposed above.—*London Medico-Chirurgical Review*, September, 1824.

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*Diagnostic between Irritation and Inflammation of the Mucous Membranes of the Bronchiæ.*—M. Nauche has remarked that, in the natural state, or where there only exists an excess of irritation, the matters secreted by the different mucous membranes have always a well marked acidity: while, on the other hand, if these membranes be inflamed, alterations of their vital properties supervene; the nature of the secretion is changed, and becomes alkaline. These two states are easily recognised by a morsel of paper tinged blue by turnsol. When the matter expectorated is acid, the paper is turned red; while it assumes a deeper blue, or is even changed from red to blue, if the matter be alkaline.

M. Nauche has examined the expectoration, with respect to its acid and alkaline character, in the diseases of the respiratory organs. He believes, from this inquiry, that they may be divided into matter produced by irritation—an increased secretion of the mucous follicles which line the membrane of the air passages—and into matter, or expectoration, which results from their inflammation. He has observed that the white, mucous, frothy expectoration which is frequently brought up in large quantities by persons in a state of agony, has always an acid character, when the air passages have not been the seat of previous disease. This character is likewise found in the white,

frothy expectoration which occurs during the whole continuance of pleurisy, whether acute or chronic; and at the commencement of pneumonia, when the matter expectorated is white, or even yellow. It is often lost in the course of this disease, and reappears toward its decline. The acid expectoration is likewise found in emphysema of the lungs and scrofulous phthisis, when the tubercles are but little developed—in the state called crude. It is evident, in all these cases, that the mucous membranes which furnish the expectoration are only in a state of increased excitement, and that they are in no degree inflamed. M. Nauche has likewise found acid expectoration in certain advanced cases of phthisis. He believes that this depended upon these matters being the product of an increased secretion of the mucous membrane lining the excavations formed by the tubercles.

The expectorated matters, on the contrary, are always alkaline in inflammation of the mucous membrane of the bronchiæ, and in all the cases designated by the names of acute and chronic colds, or mucous phthisis (*phthises muqueuses*). Although this expectoration is not regarded as purulent, it is nevertheless a kind of pus peculiar to inflammation of these membranes, and analogous to the purulent serosity which is furnished by serous membranes when in a state of inflammation.

The expectoration likewise becomes alkaline in peripneumony, when the inflammation of the pulmonary tissue communicates itself to that of the mucous membrane of the bronchiæ; and this secretion is the product of the inflammation of these two tissues.

The expectoration is likewise alkaline in phthisis pulmonalis, in the second or third stage, when the tubercles become broken down. It is usual in such cases, to find the internal membrane of the lungs deeply altered.

It frequently happens, particularly among phthisical patients, that both these kinds of expectoration are to be found in the same vessel. That which results from an augmented excitement comes up most easily—is white, frothy, and acid; the other is brought up with difficulty, is yellow, thick, and alkaline. In this disease, when the patient has only the former kind of expectoration, his life is often in the greatest danger.—*London Med. and Phys. Journ. Nov. 1824.*

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*Hydrophobia*—Dr. Capello of Rome, in a memoir read before the Academy de Linnæi, affirms that the hydrophobic poison, after its first transmission, loses the power of conveying the disease. This remark, already pointed out by Bader, is confirmed by repeated experiments made by Dr. Capello, both upon dogs and other animals. A lap-dog and cat were both

inoculated with the saliva of a dog, who died of *inoculated* hydrophobia : they both remained free from disease ; and three years afterwards the lap-dog was again inoculated, from a dog who became rabid *spontaneously* ; he then took the disease and died.

An ox was bitten by a dog attacked with rabies ; he became hydrophobic, and bit many other animals : all remained free from the affection. The dog that bit the ox also bit a child, who died about four months after, with all the symptoms of hydrophobia : with the saliva of this child a dog was inoculated, but the disease was not transmitted.

Dr. Capello relates one more history in confirmation of this fact, and which is very strong, inasmuch as the animal, which was bit by another dog belonging to the same person, becoming hydrophobic on the fifty-first day, broke the chain with which he was fastened, and escaped into the street, where he bit many persons, and the dogs of two persons, (who are named,) and finally disappeared among the ruins of the villa of Quintelius Varus. Not one of the persons so bitten, nor even of the dogs, had the slightest symptom of hydrophobia.

Dr. Capello gives us no satisfactory account of the origin of the spontaneous hydrophobia, which he would endeavour to persuade his readers is caused by the violence of the venereal appetite in the canine species, when restrained from indulgence. He also informs us that he has not been able to verify the observations of Dr. Marochetti, relative to the pustules under the tongue ; and, on this point, he therefore agrees with the physicians of Wirtemberg, who, by the desire of the College of Medicine, were ordered to examine the tongues of those men and animals who were the subjects of the disease throughout that kingdom.—*Annali Universali, Guigno.*

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*Pathology of Phlegmasia Dolens.*—M. Velpeau has related three cases of this disease, in all of which some alteration, more or less considerable, was found at the sacro-iliac symphysis of the same side on which the limb was affected ; purulent effusions in the peritoneum, particularly about the genital organs ; abscesses in the diseased limb ; and, lastly, a mixture of pus and coagulated blood in the veins of the limb, with evident traces of inflammation of their coats, in two of the cases. M. Velpeau regards the alteration of the symphyses as the original source of the disease, which afterwards becomes extended to the limb ; the veins, according to him, being only consecutively affected, whether the pus in their cavities may have been originally formed there, or introduced by absorption. The veins were incompletely obliterated.

These facts agree with the observations of M. Bouillard on



the causes of certain kinds of dropsy ; and our readers will find, by referring to our analysis of Dr. Davis's paper, in the last volume of the Medico-Chirurgical Transactions, that these cases are in confirmation of his views, although his opinions are not entirely the same as those of M. Velpeau.—*Bulletin des Sciences Medicales, Juillet.*

*Experiments on the Treatment of the Itch.*—An extensive series of experiments on the comparative advantages of the different methods of treatment proposed for the itch has been made, under the direction of Dr. Maury, physician to the Hospital of St. Louis. The points to be ascertained were, the length of time required—the expense of the medicines—their effects upon the skin—and their comparative degrees of convenience with regard to the linen of the patients. The subjects of experiment were selected—that is to say, those only were chosen, in whom the nature of the eruption was quite unequivocal, and who had not previously made use of any external application, nor internal remedy.

Twenty-one formulæ, with their results are given: we subjoin four of those which appear to have cured the disease in the shortest period.

1. Camphorated liniment, of M. Vardy, composed of two ounces of olive or almond oil, and two drachms of camphor. Mean duration of the treatment, thirteen days and three tenths. This medicine is too expensive for habitual use at an hospital; it stains the linen; the smell is not unpleasant: it effects the cure without irritating the skin, and the itching is much relieved by the first application. It is recommended as a good remedy for private practice. The compound liniment of M. Fournier differs from the preceding only in the addition of two drachms of liquid ammonia, and the combination is favourably spoken of. The medium length of time required for the cure being reduced to eleven days and four-tenths.

2. Sulphur pomatum, of M. Helmerick: sublimed sulphur, two parts; purified potass, one part; lard, eight parts. Two frictions are made in the day, using two ounces of the pomatum for each. Mean duration of the treatment, eleven days and seven-tenths. The price of this is moderate; it soils the linen, from the excess of fat over the alkali; has some smell, but does not incommode the skin, and effects a speedy cure. It differs little from the "pommade sulphuro-alkaline," employed at the Hospital of St. Louis.

3. Pomatum proposed by M. Melier: subcarbonate of soda, two ounces; water, one ounce; olive oil, four ounces; flowers of sulphur, four ounces. Dissolve the subcarbonate in the water, and add the oil, so as to make a soap; then add the sul-

phur by little and little, carefully mixing it. Of this, two ounces are to be used for each friction, and these to be employed twice a day. Mean period required for a cure, thirteen days and seven tenths. This method presents the advantage of an oil and alkali united in such proportions as to form a soap, by which means it is prevented from staining the linen, and cures the eruption without irritating the skin. It is not without smell. It is suggested that camphor might be substituted for the sulphur, in the proportion of four drachms to the quantity above mentioned.

4. Sulphureous baths. To a common bath add four ounces of the sulphuret of potass. Mean time required for the cure, seventeen days and three-tenths. This method is very gentle, effecting the cure without inconvenience, but slowly, and not suiting every patient. The bath may be rendered more active, and the cure more speedy, by adding a little sulphuric acid. It is expensive, however, and can scarcely be employed but on a great scale.

5. Sulphureous fumigations. Fumigations with sulphureous acid are employed at the Hospital of St. Louis. The mean time required is twenty-one days and four-tenths. This method has been too much praised; it is expensive, and produces the cure but slowly. Many patients are unable to support it; it fatigues the chest when the lungs are weak. It is free from odour and uncleanness; but these advantages do not compensate for the tediousness of the treatment. Spirituous fumigations are still less efficacious.

6. Decoction of tobacco; made by putting two ounces of tobacco in a pound of water, and bringing it to the boiling point. Two lotions were employed every day, consisting of half a wine-glassful each. Mean time required, twenty days and two-tenths. This method is expensive, and not altogether free from inconvenience, as several instances occurred of nausea and vertigo, while the odour proved harassing to some of the patients.—*Journal General de Medicine, Juillet.*

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*Efficacy of Tartar-Emetic Ointment.*—Dr. Tonelli has published an account of his experience of this remedy, preceded, however, by much theoretical reasoning on its mode of action. He asserts that, in forty cases in which he employed this remedy, thirty-one were perfectly restored, four were greatly relieved, and five died. Among the diseases for which he prescribed this ointment, were fevers, pleurisies, chronic catarrhs, rheumatism, *tubercular suppurations*, acute asthma, *two cases of vomica*, a threatened pulmonary consumption, *another advanced to its second stage*, and a hydrothorax.

A remarkable instance is also detailed of the perfect cure of a case of insanity by this means. The patient was a woman.

forty-five years of age, in whom insanity succeeded to an attack of fever: all the remedies previously adopted had failed in affording relief, when the tartar emetic ointment was freely rubbed in, from the crown of the head to the first cervical vertebra; the head being shaved. Under this discipline, nausea was produced, and continued constantly; a large crop of pustules soon appeared; and in two months the symptoms of mental malady had entirely ceased.

The quantity of tartar emetic employed was one drachm and a half to the same quantity of lard, sometimes a drachm to three of the ointment; and the author recommends that the tartar emetic be reduced to an impalpable powder. The parts where he employs the frictions are the epigastrium, the anterior part of the thorax, and at the same time upon the back, between the internal margin of the scapula and the vertebral column.—*Annali Universali*, Luglio.

*Effects of the Croton Oil.*—Dr. Fenoglio, of Turin, has published a series of experiments on the use of the above mentioned oil; from which he draws the following conclusions:

1st. That the effects of this oil are to produce a sense of burning in the fauces, slight pains in the belly, and a general sense of fatigue.

2d. That it may be looked upon as an antiphlogistic of no ordinary powers; but not to be administered where there exists any inflammatory action of the digestive canal.

3d. That it does not possess any diuretic property.

4th. That, generally speaking, in the doses usually administered, it is powerfully drastic.

5th. That, in doses of a drop, it does not produce the violent effects that have been by some attributed to it.

6th. That, where more numerous evacuations have been procured, other purgatives, or glysters, have assisted its action.

7th. That, given in the form of pill, the effect upon the mouth and fauces is avoided.

8th. That it should not be given in solution, as it appears thereby to be imperfect in its action.

So far Dr. Fenoglio's experience extends. We have, immediately following, the result of the experiments made in the clinical department of the University of Padua, communicated to us by Pietro Benvenuti, and which appear more in conformity with the experience of the English practitioner. The conclusions this latter gentleman has arrived at are the following:

1st. That the Croton oil is the most violent of all drastic purgatives at present known.

2d. That this oil produces its effects without the medium of any vehicle, by mere contact.



3d. That the irritation of the fauces produced by it, is always greatest when the oil is least diluted.

4th. That half a drop operates in a much greater degree of proportionate violence than a larger quantity.

5th. That the purgative effects are in an inverse ratio to the irritation produced upon the fauces.

6th. That it is possessed not only of an acrid, but of a caustic quality also.

7th, and lastly. That, besides its action on the fauces and intestines, it appears to exert a power over the urinary apparatus, *diminishing* the quantity of urine; and, therefore, the Professor thinks that it may be given with every chance of success in cases of diabetes mellitus.—*Annali Universali, May.*

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*Occlusion of the Intestinal and Urinary Passages.*—We advise the curators of the college of surgeons to despatch a confidential agent to the department of the Meuse, in order to treat for the body (dead or alive) of Claude Rouget, more commonly known by the name of *Daudiche*, as a proper companion for the Sicilian dwarf, in the museum. Before we communicate the particulars of this extraordinary case to the public, we must say that we entertain doubts of its authenticity, since the narrator only gathered the items from popular report, or, at best, from the statements of others. At the same time, we do not deny the possibility of the case, though we look for actual ocular demonstration, before we give implicit credence to the narrative.

Dr Prosper Sylvan Denis, a student in Paris, states that the said *Daudiche* is now sixty-eight years of age—that, till the age of ten, there was nothing particular in his conformation or health—that, at that period, it is said, one of his parents, for some sinister or self-interested purpose, subjected the child to some cruel experiments, by which it would appear that the spine was either broken, dislocated, or contorted, so as to produce lesion of the spinal marrow, paraplegia, and cessation of growth in the lower half of the body. These last phenomena are sufficiently authenticated; but the main wonder is yet to come. The urinary and intestinal canals are obliterated at their terminations, and, consequently, *Daudiche* never passes either urine or fæces. Yet he eats with a good appetite; but, in a very short time afterwards, vomits up the half-digested aliments, without pain or difficulty—then eats again, and so on.

The lower extremities of this man are no larger than they were at the age of ten years—the sexual organs are almost obliterated—the parietes of the abdomen almost touch the spine, so that there seems a vast vacuum or loss of substance between the ensiform cartilage and pubes. The upper part of the body

is sufficiently developed—the memory is prompt and retentive ; but the other intellectual faculties, not having been exercised much, cannot be judged of.

Daudiche and his friends resolutely deny all anatomical or physiological examinations ; but Dr. Denis states that his father and grand father, both medical men, had opportunities of ascertaining, by personal investigation, the above particulars, and that his statements are principally from their notes. Daudiche, in the quality of mendicant, and mounted on a little stage drawn on wheels, levies a very considerable contribution on the curious and charitable travellers who pass through his native town of Void, on the main road between Paris and Strasburg. He takes his daily station near where the diligences stop, and collects a revenue sufficient for himself and his principal relations. The case is published in the April number of the Archives Generales, and Dr. Breschet, one of the editors, properly remarks that, till death and dissection confirm the above particulars, some doubt must attach to the statement. He cites a case of a similar nature, from Thomas Bartholin, who, while in Italy, saw a man, forty years of age, robust and healthy, who offered no trace of anus or genital organs. This state rendered his sex doubtful, but he was baptized as a female. At the age of twenty-four, however, he showed a beard, and claimed the privileges of the masculine gender. This man vomited, from time to time, the fæcal remains through a horn, which he placed in his mouth at those periods, to prevent their contact with the tongue and lips. The urine distilled, *guttatim*, from a small aperture near the umbilicus.

We give these cases as we find them—neither believing with implicit credulity, nor denying with obstinate scepticism, the particular details. Considering the wonder-working powers of nature, there is nothing in the above cases that is calculated to shut out belief in toto. We once saw a female vomit up the remains of her food for more than a fortnight, in consequence of a volvulus—and we verily believe that she died at last, more from the strong medicines we exhibited to force a passage, than from the actual obstruction of the intestinal canal. It is therefore impossible to say, how far nature can compensate for original or early defects in structure or function by vicarious and apparently improbable means.—*Med.-Chur. Rev. Sept.*

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#### AMERICAN INTELLIGENCE.

[Our friend Major S. H. Long having kindly presented us with a copy of the Meteorological Observations and Tables prepared by Dr. Lovell of the United States Army, and recently published in the Account of the Expedition to the Lakes, we

take the liberty of offering the interesting preliminary remarks, for the gratification of our readers. We suppose that the author was not aware of the zealous and judicious labours of Mr. Brantz, of Baltimore, who has devoted much attention to this subject, and constructed some valuable tables to aid in determining the true character of our climate; a copy of Mr. BRANTZ's tables may be seen at the Hall of the Academy of Natural Sciences. We shall be pleased hereafter to make known the result of his future researches. EDITOR.]

"These tables are abstracts of meteorological observations taken at eight of the military posts of the Atlantic coast, extending from Eastport in Maine, to Fort St. Philip near New Orleans; at one on the Mississippi, above New Orleans: and at seven on the north-western frontier, from Council Bluffs on the Missouri, to Fort Niagara on Lake Ontario; embracing an extent of  $16^{\circ} 22'$  of latitude, and  $28^{\circ} 39'$  of longitude. To these have been added, as a standard of comparison, observations taken during the same year near the city of Philadelphia.

"It will be perceived that Eastport, Portland, Fort Constitution near Portsmouth, and Newport, are respectively in about the same latitude as Fort St. Anthony, Green Bay, Prairie du Chien, and Council Bluffs; while the average difference of longitude is  $21^{\circ} 39'$ . On comparing the observations taken in these two sections of the country, the most remarkable difference will be found to consist in the extreme cold of the winter, and the proportionate warmth of the summer at the Western, and the comparative equable temperature at the Eastern Posts. In January, which is the coldest month, the thermometer stood at  $-25^{\circ}$  at Fort St. Anthony;  $-23^{\circ}$  at Green's Bay;  $-19^{\circ}$  at Prairie du Chien, and  $-16^{\circ}$  at Council Bluffs. The mean for the month at the first place was 11.68; at the second 13.20; at the third 14.86; and at the fourth 21.02. In the same month, the lowest degree at Eastport was  $-9^{\circ}$ ; at Portland  $-10^{\circ}$ ; at Fort Constitution  $-7^{\circ}$ ; and at Newport 0. The mean for the month at the first place was 17.53; at the second 17.63; at the third 20.50; and at the fourth 26.54. Thus at the west the lowest degree on an average of four observations was  $-20.75$ , and the mean for the month 15.79°, while at the East the average lowest degree was  $-6.50$ , and the mean for the month 20.55, making the difference for the month 4.76.

"In July, which is the hottest month, the weather was proportionately warm at the west. Thus the highest degree, on our average of four observations, is  $96^{\circ}$ ; and the mean for the month 75.31, while at the east the highest degree is 83, and the mean for the month 68.82; making a difference of 6.49. The mean for the year at the four western posts is 46.04; and at the four eastern 47.23, a difference of 1.19 only.

"The centre of these sixteen stations lies between Norfolk and



Annapolis: taking therefore these two posts, and the three northern and the three southern ones, which are respectively about equidistant from this centre, it will give 53.91 as the mean temperature for the year throughout the country; which is about the same as that of *Détroit* in Michigan Territory.

“The difference in the range in the thermometer was  $27^{\circ}$ ; it being  $133^{\circ}$  at the west, and  $106^{\circ}$  at the east. At the most southern station it was but  $43^{\circ}$ . The result of forty-eight monthly observations of the course of the winds at the western posts is N. W. 20—S. W. 17—N. 5—N. E. 2—S. E. 2—W. 1—S. 1. At the east, N. W. 14—S. W. 14—S. 11—S. E. 3—N. 3—W. 2—N. E. 1. The N. W. and S. W. are therefore decidedly the prevailing winds being in the proportion of 65 to 31; and it is remarkable that the proportion of S. W. winds in the summer; and of N. W. winds in the winter at the western is exactly the same as at the eastern posts.

“At the west the proportion of fair weather to cloudy is as 17 to 7; and at the east as 11 to 1. The proportion of fair weather at the east is to that of the west, as 4 to 3, nearly.

“On comparing these results with the most accurate accounts we have of the climate of the eastern States on their first settlement, we shall find that it was much the same as that of the north western frontier at the present time. The winters were much more severe, the summers warmer; and the mean temperature of the year probably about the same that it now is.

“Similar changes are believed to have taken place in Europe; and this fact will in a great measure account for the contradictory statements of writers on this subject; some of whom affirm that the climate of Europe and the eastern part of the United States is warmer, some that it is colder; and others that there is no material change. The one party stating, by way of proof, that the Rhine, Danube, and Tiber rivers, the Euxine and the borders of the Mediterranean Sea, &c. were frozen during the winter months of former years, and that many plants could not be preserved through the winter, even in the north of Italy, which are now successfully cultivated in much higher latitudes; while the other asserts that at present many kinds of grain and fruit will not come to perfection in large districts of country, where they formerly flourished and were perhaps indigenous.

“The truth probably is, that the mean annual temperature is about the same; but that the climate is much milder in consequence of the great reduction in the range of the thermometer—that the quantity of heat is the same; but that it is now more equally distributed throughout the year. This supposition will explain the facts above stated. For on comparing the monthly mean temperature of the western and eastern posts as given in these tables, we shall find that although in January it is much lower at the west, yet the spring advances more rapidly; that

even by March it is  $2^{\circ} 45'$  higher than at the eastern posts; and that by July the difference is  $6^{\circ} 49'$ . Of course such plants will thrive as require a warm summer to bring them to perfection, and are yet hardy enough, with due care and a proper exposure, to withstand a severe winter; while the more delicate and sensible ones, which flourish under a milder summer's sun, will be frozen up with the surrounding rivers, lakes, and seas.

"The causes of this change have also been the subject of no little dispute: but it is thought that numerous circumstances connected with the rapid settlement of the United States will show that it has been produced mainly by the clearing of the country, and the cultivation of the soil. Had accurate observations been kept, it is believed that the change in the climate of the United States would appear to have been as rapid, in comparison with that in Europe, as the increase of population and the extension of cultivation has been unexampled; and that the effect has in both cases borne as exact a proportion to the cause, as could be expected in a subject susceptible of so many variations from accidental and extrinsic circumstances.

"How far the character of the diseases of a country are affected by difference of temperature can of course only be decided by numerous observations, many circumstances, however, render it probable, that whether observations are made at various places within the same period, or at the same place through a succession of years, we shall find a close connection between the temperature of the several parts of the year and the diseases of the place or period.

"From the sick reports of the army, intermittent and remittent fevers appear at present to be the prevailing diseases of the greater part of our country, and there is reason to believe that the proportion of remittents has not only increased within a few years, but that they are much more frequently combined with symptoms of derangement of the biliary organs.

"Out of 7000 cases of acute disease, upwards of 3000 were of fevers of an intermittent and remittent type, 1750 of inflammatory complaints common to all parts of the country during the winter months; and of the remainder, the greater part were of disorders peculiar to the life, habits, and duties of a soldier in all situations. At the western posts by far the greater proportion of cases are intermittents. At the southern and middle Atlantic stations, remittents of a decidedly bilious character prevail to a greater or less extent, and during the present year, (1822,) the bilious remittent or yellow fever was unusually fatal at several posts, and more especially at and near Pensacola in Florida, the first death occurred about the 7th of August; there were upwards of 20 between the 13th and 20th of the month, and by the end of September it is stated that more than 200 died out of a population of about 1000.

“ By the tables it will be observed, that from the 17th of July to the 2d of September, the daily mean temperature was steadily as high as  $80\frac{1}{2}^{\circ}$  with the exception of one day, and below  $81\frac{1}{2}^{\circ}$  only three days during that period. The mean temperature for the month of August was 92.22, and the range of the thermometer but 14; the highest degree being 89, and the lowest 75.

“ Even as early as June, there appears to have been a peculiarly unhealthy state of the atmosphere; and the very intelligent surgeon of the post, Dr. M'Mahon, in his report on the 30th of September, states, that “ the month of June was ushered in by the prevalence of a fatal distemper among the brute animals, its operation was particularly marked upon dogs—foxes and panthers, in the woods, suffered very severely, the mortality among them was indeed immense, numbers of them were found dead in every direction, and it is somewhat singular that they were generally found in troops of four, five, and six, collected about the same spot.” Whether the diseases of our country are more fatal than formerly, and if so, whether it arise from the bad practice of the professors of the healing art, as appears of late to be the opinion of some of them, is believed to be somewhat problematical—at any rate, it is but reasonable to defer a decision on so important a subject, until we shall have collected a series of well attested facts; and not to mistake the suggestions of an overweening vanity for the results of calm investigation and practical experience.”





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